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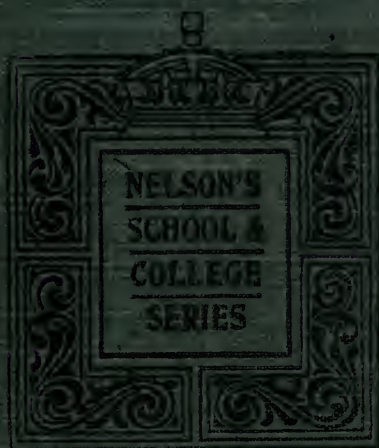
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# Commercial Geography

of the

## British Empire

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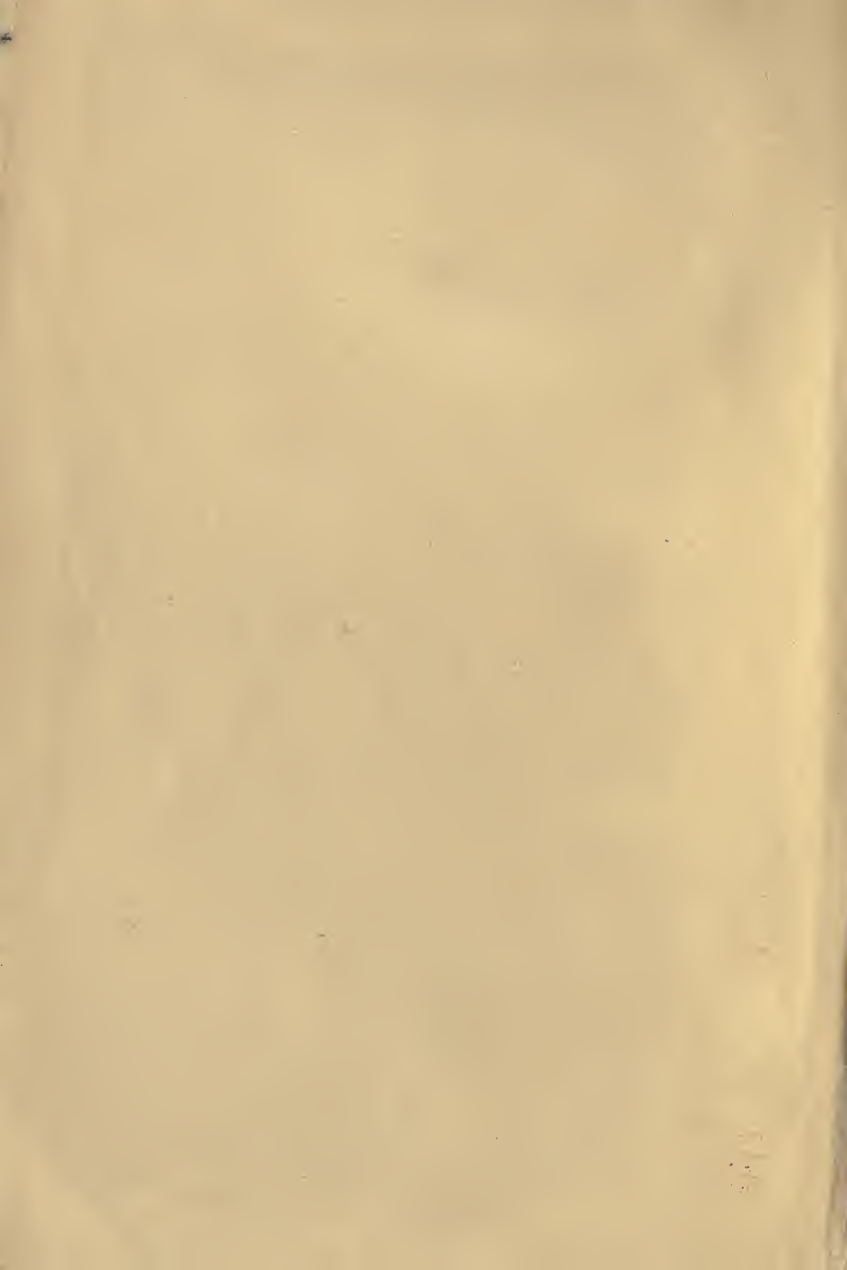


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A COMMERCIAL GEOGRAPHY OF  
THE BRITISH EMPIRE



# A Commercial Geography of the British Empire

BY

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11

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Science and Technical School



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## GENERAL

*"Sons and brothers, that have sent,  
From isle and cape and continent,  
Produce of your field and flood,  
Mount and mine, and primal wood;  
Works of subtle brain and hand,  
And splendours of the morning lana;  
Gifts from every British zone,—  
Britons, hold your own!"*

TENNYSON.

## P R E F A C E.

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IN preparing the following pages, an endeavour has been made to supply information useful alike to the student and the general reader. The ramifications of the subject are too extensive to be adequately treated within the limits of one small volume, and much of the matter, therefore, is intended to be simply suggestive.

There is scarcely any limit to the means of supplementing the information given. Such publications as *The Statesman's Year Book*, *Whitaker's Almanac*, and the *Board of Trade Journal* are invaluable in affording reliable statistics. The various colonial year books, and the periodical reports issued by the Colonial Office, contain much that is interesting and instructive; but the earnest student must remember that the daily press almost unfailingly marks the never-ceasing changes that constantly affect the markets of the world.

E. P.

MUNICIPAL SCIENCE AND TECHNICAL SCHOOL,  
WOLVERHAMPTON, *July 1902.*



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# COMMERCIAL GEOGRAPHY.

## PART I.

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### CHAPTER I.

#### INTRODUCTION.



**The Rise of Commerce.**—Commerce is almost as old as the human race itself, since man always trafficked in the first necessities of life, and the earliest Biblical records frequently refer to merchants. The Phœnicians were the first navigators and carriers of goods by sea, as is evidenced by Solomon's dealings with them: "Once in three years came the navy of Tharshish, bringing gold, ivory, and apes, and peacocks." The fall of Tyre and Sidon practically marked the disappearance of the Phœnicians, who were succeeded by the Greeks, and Athens and Corinth became the seats of much commercial splendour. Carthage in her day was a great shipping power, but succumbed to the might of Rome 146 B.C., as did Greece little more than half a century later. The Romans were in turn succeeded by the Venetians, who for a thousand years controlled the commerce of nearly the whole of the then known world.

It was in the closing years of the fifteenth century that commerce received a startling impetus. Diaz, a Portuguese navigator, reached the Cape of Good Hope in 1486. In the same year a compatriot visited India by the overland route, while a dozen years later Vasco da Gama reached Calicut *via* South Africa. In the meantime Columbus had groped his way across the Atlantic, and the dawn of a new world set European mariners dreaming golden dreams.

British navigators worthily held their own in the stern struggles for dominion that ensued, and the foundations of the British world-wide empire were laid by daring sea-dogs whose equal the world has never seen.

John Cabot, in the service of certain English merchants, in 1497 discovered the continent of North America almost half a

century before Raleigh planted our first American colony. In 1620, the Pilgrim Fathers left our shores—an action in which lay the birth of the United States. The year 1600 saw the establishment of the English East India Company, whose work was only completed when India passed into the possession of the British. A few years later, Quebec was founded by the French; but in 1763 Canada passed to Great Britain. Seven years later, in the Southern seas, Captain Cook hoisted the British flag in Australia, securing for us a whole continent without



ANCIENT SHIP.

the shedding of blood or the loss of a single life.

This brief record of exploration and conquest is the history of the growth and extension of commerce. New lands and strange peoples have meant to the great trading nations of the world new markets for their products, and increased scope for their industrial and commercial activity.

**Commerce and Geography.**—That there is a close connection between the world of commerce and the science of geography is apparent to even the casual observer.

**Commerce** may be very simply defined as the distribution of the raw and manufactured commodities of the whole world. Though some specially favoured portion of the earth may produce everything necessary to sustain the life of its people, it will assuredly be found that another region yields some commodity the posses-

sion of which will at least add to the comfort and convenience of life ; and thus arises a trade in that product, perhaps between two very widely separated peoples.

We will suppose an inhabitant of the British Isles decides so to order his life that he will have recourse to no commodity which is not produced within the borders of his own country. Let us enumerate but a very few of the articles that will henceforth cease to be at his disposal. Cotton and silk will form no part of his attire ; his morning meal will not include tea, coffee, or cocoa ; his dinner-table will be denuded of rice, sago, tapioca, and arrowroot ; and oranges and bananas will disappear from the dessert. He must dispense with furniture made of ornamental woods, as ebony, mahogany, and bamboo ; his wife must abandon most of her jewelry, and no longer wear the treasured Cashmere shawl or sealskin coat. India-rubber tyres must be stripped off the bicycle ; tobacco and cigars must cease to be anything but a memory ; and even his medical attendant must be warned to forego the use of many valuable foreign drugs with which he is wont to alleviate the pains and ailments of the family.

Nor is this all. Many of the common necessities of life are cheap only because our native supplies are vastly increased from abroad. If we prohibit these supplies, the native product will at once reach a price far beyond the means of the average individual.

All the hundred and one wants of our daily life are brought to our doors by commerce ; and since we require articles not only from various parts of our own country, but from all over the world, to minister to our necessities, we have to call in the aid of geography to tell us—

1. Where the various commodities can be obtained.
2. The conditions under which they are found.
3. The quickest and cheapest means by which they can be brought to our markets.

In short, we have to consider everything that appertains to man and his markets. We shall require to know the necessities of other peoples in different parts of the world, and to be familiar with the easiest methods of communicating with them. Information on all these points, together with many others, will be afforded by a study of Commercial Geography.

The main facts of physical geography are practically unalterable ; political geography is subject to such alteration as the varying internal and external relationships of different countries bring about ; but commercial geography is subject to remarkably rapid





*The circles are drawn at intervals of 1,000 miles from London as a centre.*

changes. War, or the mere rumour of it, a strike, a famine, a glut, or even a storm, instantly affects the world's markets. It is important, therefore, to affix dates to commercial facts and statistics wherever possible.

It is almost impossible to exaggerate the many-sidedness of our subject, or the interesting investigations that are opened up to us. In fancy we may watch the Hindoo sweltering in the cotton-field. The cotton that is picked may, perchance, go to the mills of Lancashire, to be converted into cotton cloth; and later it may form part of the scanty attire of the very man who originally gathered the raw material. We may follow the progress of the ore drawn from an iron-mine in Sweden. Transferred to the Durham or Yorkshire coal-field, it may be transformed into steel,



*The circles are drawn at intervals of 1,000 miles from London as a centre.*

which may be utilized in the construction of an engine, which, in due course of time, may assist in raising more ore from the mine from which the engine itself issued as raw material.

**Maps** are indispensable to all engaged in commercial transactions. The chief use of a map is to fix the position of a place, and also to fix its position in relation to other places. By its means we can ascertain whether a given place is on the sea-coast or on the bank of a river; whether it may be approached by rail, or whether the only means of communication is by road.

A desirable preliminary to the study of commercial geography is a knowledge of the map of the world. The student should familiarize himself with the positions of the principal countries, and the seas that surround or approach them. He should be able

to deduce much useful information from the map alone. For example, it will readily be seen that a journey from England to British Columbia entails a voyage of 2,600 miles across the Atlantic to Quebec, followed by an even longer railway journey across the continent of North America. The value of the Suez Canal as a link in our means of communication with the East is easily gauged by comparing the older route *via* the Cape of Good Hope; and a glance at the map shows the possibilities opened up to commerce by the construction of a ship canal across Central America.

**Consular Reports.**—Commerce has a literature all its own, and there are in existence vast stores of facts and figures of incalculable value to the trader. All civilized nations keep strict records of their commercial transactions with other countries, and, in addition, are represented in various parts of the world by officials called consuls, who watch with jealous eyes the interests of their nation. They note the productions and the requirements of the district or country where they are stationed, and their periodical reports to their respective governments are printed, and placed at the disposal of all interested persons.

**Natural Resources.**—The natural productions of a country fall under three heads :—

1. Vegetable commodities.
2. Animal commodities.
3. Mineral commodities.

The interchange of these productions gives rise to an enormous traffic, and the raw materials form the basis of manufactures, the intricacies and alternations of which are not readily followed. An article may be composed entirely of one of the above commodities, or it may even contain all three. The main portion of a shoe may be leather, an animal product; or the upper may be of cloth, a vegetable commodity; while the nails which hold it together are of the mineral kingdom.

**Natural Conditions.**—The necessities of a country very largely depend upon its situation. Our own country is in want of numerous commodities yielded by tropical regions, the production of which is forbidden by our colder climate. Less civilized countries are in need of all those manufactured goods which their ignorance does not allow them to produce for themselves.

Whether a country attain a position of commercial importance depends largely upon its productions and its necessities. To attain eminence in commerce, however, a country must possess certain



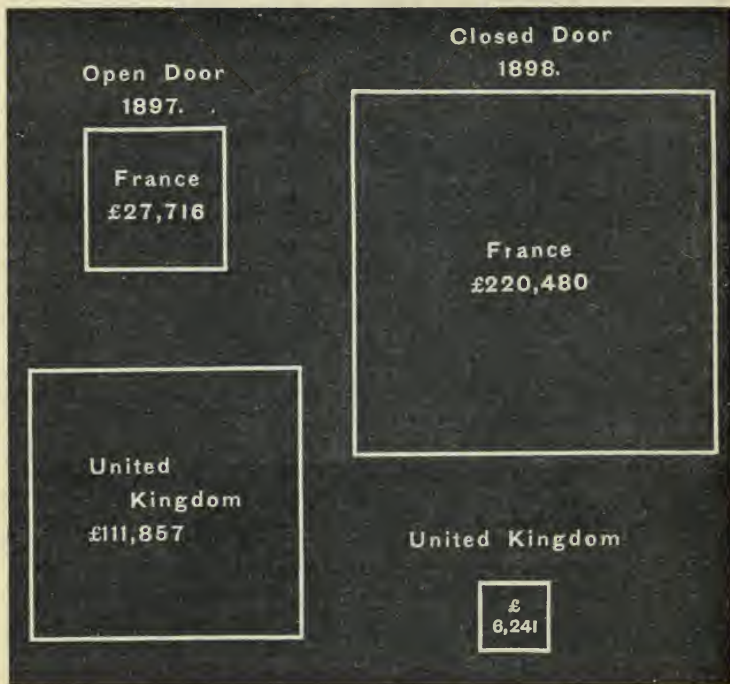
more or less stereotyped natural advantages. The possession of navigable rivers and of a sea-frontage containing good harbours are valuable initial advantages over an inland mountainous region, where these desirable conditions do not obtain. It is of value, too, for a country to possess such a well-defined frontier as to render it free from the liability to sudden attack by enemies; add to this a climate free from extremes, and we have almost ideal natural conditions for commercial activity. But good natural conditions alone will not secure commerce to the country possessing them. The people themselves must be industrious and energetic, or the trade which they ought to possess will fall to the share of more vigorous and enterprising competitors.

**Money.**—The strands of the web of commerce enmesh the whole world, and the methods adopted by traders of most nationalities differ but little in their general principles. In all civilized countries money or metal coins is the recognized medium of exchange in buying and selling one to another. Where the persons transacting business may be thousands of miles apart, a more convenient form of money is desirable, and this is found in bank-notes, cheques, postal money orders, and bills, or promises to pay.

**Obstacles to Commerce.**—The current of trade, which flows in more or less naturally regulated channels, is not infrequently diverted by artificial barriers. Until recently \* almost all goods, except a few special luxuries, as wine, spirits, tobacco, tea, coffee, sugar, cocoa, currants, and raisins, were allowed to enter and leave the United Kingdom without any payment other than freight, dock, or warehouse dues, because we have adopted the system of **Free Trade**. Continental nations, the United States, and even some British colonies, have adopted the system of **Protection**, under which a tax is laid upon all manufactured goods entering the country, especially such as might be produced within their own borders. In other words, the goods of foreign countries are taxed to such an extent as to render it almost impossible for them to compete with the home industries. Raw materials usually escape the imposition of duty, manufactured goods very rarely. We cannot here discuss the merits of the two systems; but there seems every reason to believe that, in the case of the United Kingdom at least, the benefits which free trade confers upon us far outweigh any disadvantages the system may entail.

**What is meant by the Open Door.**—Our territories in all parts of the world are maintained and expanded chiefly to provide

\* See *wheat and coal*, pp. 25 and 128.



HOW THE CLOSED DOOR AFFECTS GREAT BRITAIN. VALUE OF COTTON PIECE GOODS EXPORTED TO MADAGASCAR FROM FRANCE AND FROM THE UNITED KINGDOM.

markets for our manufactures. It is to our advantage to acquire new territory rather than allow it to fall into the hands of our commercial competitors, who, by means of protective tariffs, will place our goods under serious disadvantages.

Madagascar affords an excellent example on this point. In 1897, France imported into the island cotton piece goods to the value of £27,616, as against British imports of the same class to the value of £111,857. When the island came under the domination of France, a prohibitive tariff was imposed on all imports other than French, with the result that the French cotton piece goods imported into the island in 1898 reached a value of £220,480, while the British imports decreased to £6,241.



**The Postal Union.**—All civilized countries possess government establishments for the conveyance of letters, book-packages, parcels, etc., by post, and the transmission of money by means of post-office orders. Usually the telegraphs are under the same department. At an international conference held at Berne in 1874, representatives of twenty-two countries and states, representing a population of 350 millions, formed the *Postal Union*. It was resolved that letters not exceeding half an ounce in weight should be delivered within the boundaries of any of the subscribing countries for 2½d., a rate which is still observed. Four years later, at Paris, eleven more states joined, raising the population served by the Union to 650 millions. The Postal Union has proved “one of the most important fields of action in the intercourse of nations.....an eminent work for their peace and prosperity.” In the case of Canada and the United States, a cheaper international rate for letters already existed, and remained undisturbed. In the United Kingdom the internal postal rates are exceedingly cheap, and in 1899 a penny post for letters of half an ounce came into force between the mother country and almost the whole of her foreign possessions.

**Government.**—All civilized nations possess a definite system of rules and principles by which the affairs of the community are regulated. The system may be either monarchical or republican. In the former the governing power is vested in a hereditary or elective monarch. A *monarchy* may be despotic or limited: in the despotic form all the powers of government are exercised by the ruler alone; in a limited monarchy the ruler exercises an executive authority as the head of a legislative body elected by the people. In a *republic* all the power is exercised by the people, who elect their legislative representatives. A president, in whom is vested the executive power, is chosen for a term of years.

The government and political constitution of a country have a most important bearing upon its industrial and commercial development. Good government ensures the freedom of the subject and encourages the energy and enterprise of the individual; it secures the safety of life and property.

The British government is the best example of the limited monarchies, as that of the United States is the best-regulated form of republican government. Turkey and some of the South American republics afford examples of government where there is little stability or security of property, and where independence of character, energy, and enterprise are discouraged, with a corresponding depressing effect upon the commercial life of the community.

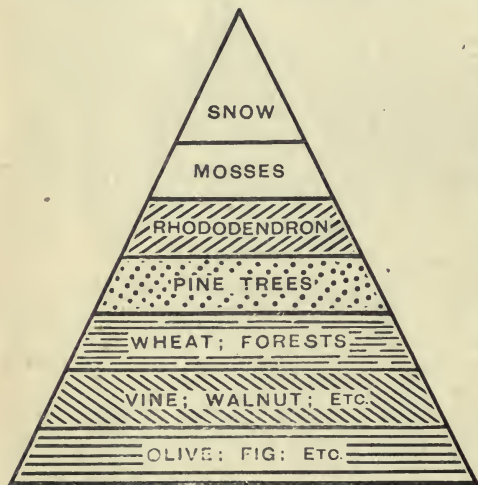
## CHAPTER II.

### VEGETABLE PRODUCTIONS.

SOIL and climate are the chief conditions which regulate the geographical distribution of plant life. Vegetation is most luxuriant in tropical regions, and there is a gradually descending scale in variety and profuseness towards the polar regions, where mosses and lichens are the highest form of vegetable life.

Between the Equator and either of the Poles may be marked out eight clearly-defined belts, each characterized by distinctly different forms of vegetation.

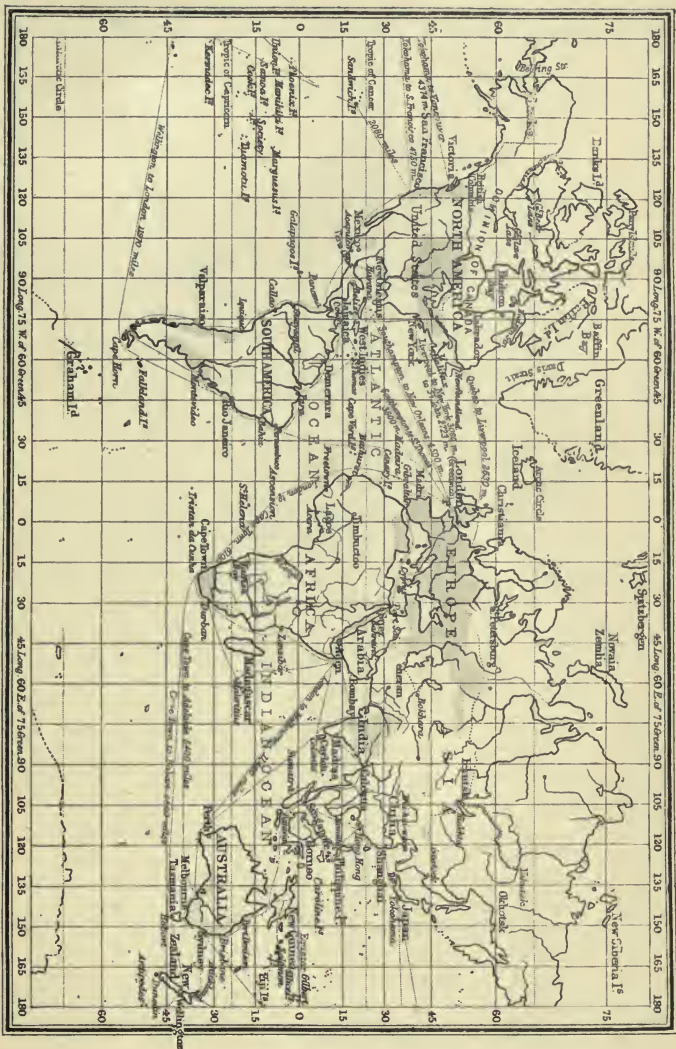
Vegetation is usually very similar all the world over in the same latitude, unless there is a great difference in elevation or other peculiar local circumstances. The space between the foot of a mountain at or about the Equator and the snowline is marked by the same eight belts as between the foot of the mountain and the Poles. The effect of elevation upon plant life is well



illustrated by reference to the Alps, where the vegetation varies from valley to summit as shown in the diagram.

Some forms of plant life are peculiar to certain regions, and





WHEAT AREAS OF THE WORLD.

can only with difficulty be grown in other regions of even the same latitude. Many of the plants of most value to man have, however, been transferred from one part of the world to another, and in some cases the plant has succeeded far better than in its original home.

### Bread Stuffs.

First and foremost of all vegetable productions are those which form the staple food material of various countries. In thinly-peopled tropical regions this staple food grows wild; the best examples of this class are the cocoa-nut, banana, and bread-fruit. It is only where vegetation is luxuriant and the population sparse that this is possible; even very savage peoples increase their supplies of food by rude cultivation.

In point of value and quantity in the world's harvest, the percentages of the chief food cereals rank in the following order:—

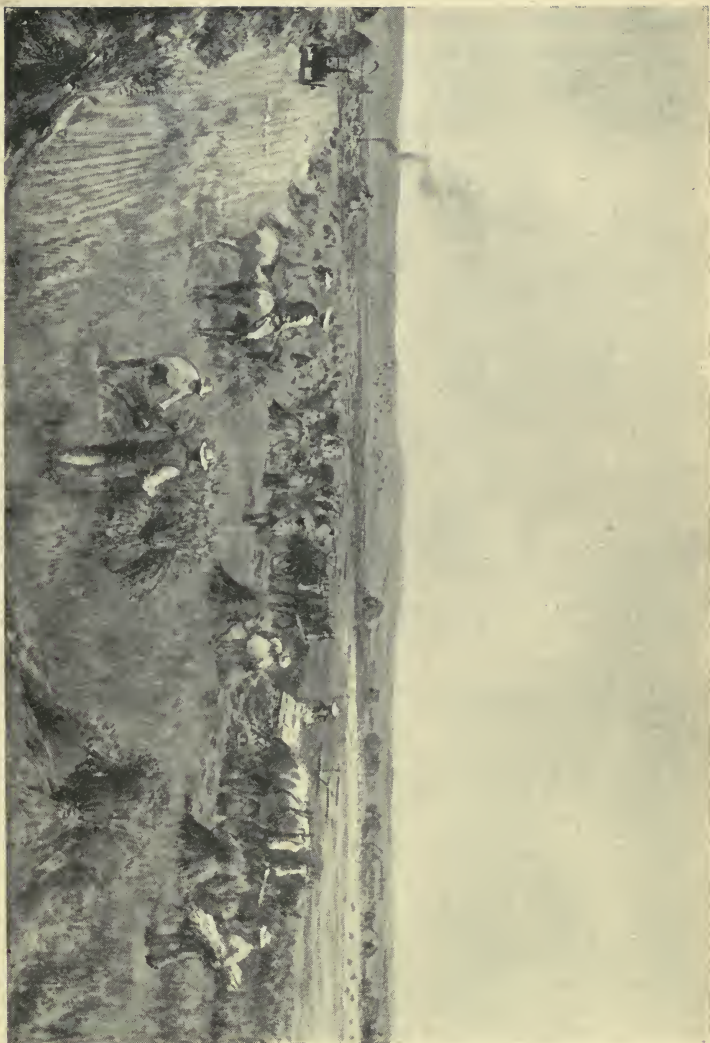
Cereals.	Value.	Quantity.
Wheat.....	40	40
Maize.....	18	14
Oats.....	16	9
Rye.....	14	10
Barley.....	9	12
Other grains.....	3	15

**Wheat** is the most valuable of all the corns from which flour may be obtained. Nearly the whole area of the temperate regions is favourable to its cultivation; it will succeed in Europe as far north as 60°, and in some places even 2,000 feet above sea-level. England, France, Germany, Spain, Italy, Hungary, Turkey, and Russia are the chief wheat-growing countries of Europe. In Asia, the best wheat regions are in India, Asia Minor, and Southern Siberia; in Africa, Egypt and the countries bordering on the Mediterranean, and British South Africa. In North and South America and Australia the wheat-lands are of almost boundless extent; where in future years will be provided food for untold millions of people.

The wheat areas being so widely distributed, there is a succession of wheat harvests all round the globe from January to December:—

*January.*—Chili, Argentine, Australia, and New Zealand.

*April.*—Mexico, Egypt, Syria, and Persia.



A WHEAT-FIELD IN MANITOBA.

*May.*—Algeria, Asia Minor, China, and Japan.

*June.*—California and the North Mediterranean countries.

*July.*—United States, France, South Germany, Austria, and South Russia.

*August.*—Part of Canada, England, Holland, Denmark, Belgium, and Germany.

*September.*—Canada and the north of Europe.

*November.*—South Africa.

*December.*—South Australia.

Crops naturally vary with the seasons, but generally a marked deficiency in one quarter of the world is counterbalanced by a heavy surplus in another.

Though in Europe about 1,500 million bushels of wheat are grown annually, several countries produce less than they consume.

1900.

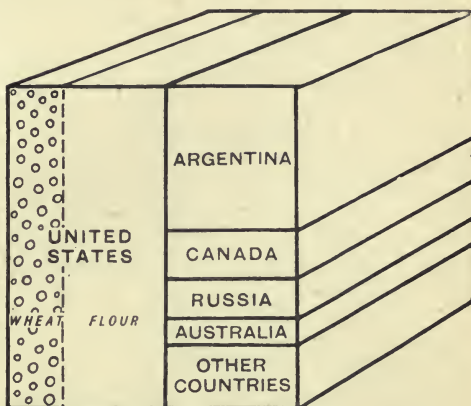
Countries.	Production.	Consumption.	Deficit.	Consumption per Head.
	Million Bushels.	Million Bushels.	Million Bushels.	Bushels.
United Kingdom....	58	240	182	6
Germany .....	120	180	60	3
France.....	304	340	36	8
Italy .....	120	150	30	5½

On the other hand, the United States had a surplus of 140 million bushels, Russia 120, and Austria 5. A combination by the United States and Russia to artificially inflate the price of wheat would be a serious matter for wheat-importing countries.

In great industrial countries there is usually an increasing tendency to neglect the tillage of the soil; in this the United Kingdom is a marked example. In 1850-60 we had 4,199,812 acres of wheat under cultivation; in 1900 the acreage had decreased to much less than 2,000,000 acres, and this in face of a great increase in population. Where cereals are cultivated in industrial countries, the results per acre greatly exceed those of the great wheat-yielding regions, where less careful tillage prevails. In the United Kingdom 28 bushels per acre is a fair average, and in Denmark at least 10 bushels more; in the United States it is about 12 bushels, and even in the rich wheat-lands of Manitoba rarely exceeds 20 bushels.



It has been calculated that Britain's foreign wheat would fill nearly 4,500 ships, which, placed end to end, would extend from Land's End to Brighton, a distance of 250 miles. For our cheap loaf we depend chiefly upon the United States, Argentina, Canada, Australasia, and Russia. In 1900, Britain imported 10 million cwt. of wheat from Greater Britain and 58 million cwt. from foreign countries, to which may be added over 21 million cwt. of flour, chiefly from the United States.



BRITISH WHEAT IMPORTS, 1900.

The following were the exact quantities derived from our chief sources :—

## BRITISH IMPORTS OF WHEAT, 1900.

	Cwt.		Cwt.
United States.....	32,588,000	Russia.....	4,421,000
Argentina.....	18,524,000	Australasia.....	3,788,000
Canada.....	6,337,000	Germany.....	1,828,000

In 1902 a tax of 3d. per cwt. was imposed upon wheat imported into the United Kingdom.

**Maize**, or Indian corn, is the only native cereal of America, where it is the most important crop. It is also largely cultivated in Asia; in the south of Europe it forms the daily food of vast numbers of people; and in South Africa it provides sustenance for man and beast.

**Oats** will grow on poor soil far beyond the limits of wheat, but do not succeed in warmer regions. In the north of Europe, particularly Russia, it is a heavy crop, and in Germany nearly three times that of wheat. In the United Kingdom, owing to its preponderance in Scotland and Ireland, it is equal to the crop of wheat and barley together; in Canada and the United States it also exceeds wheat in quantity.

Oat flour makes very palatable bread, used extensively in northern countries; as a food for horses oats are invaluable.

**Rye.**—The cultivation of this cereal is practically confined to Europe, where it is largely grown in the centre and north. Next to wheat in nutritive qualities, it is the staple food of large populations. It provides the black bread of the German and Russian peasantry and the rye cakes of Sweden, which are baked periodically and kept for months. The Russians use rye in the

production of the national drink, *kvass*, a kind of beer; and it enters largely into Hollands gin and into the whisky of the United States.

**Barley** has a very wide range: it will succeed in the hot regions of Africa and Central Asia; it will thrive as far north as 70°, and will even ripen at an altitude of 11,000 feet in the Himalayas. Many of the people of Wales, Cumberland and Westmoreland, and Scotland eat bread made of barley flour. Its chief use, however, is to make *malt*, from which ale, porter, and whisky are prepared.

**Rice.**—It is scarcely too much to say that one-third of the human race subsist chiefly upon rice.

It is grown extensively in India and Eastern Asia, Egypt, Northern Italy, and in the south of the United States.

Rice requires a temperature of from 60° to 80°, and will grow only in marshy regions, or where the ground is easily inundated. Containing about 75 per cent. of starchy matter, and possessing but little flesh-forming property, rice can only be a staple food in warm countries. In India, with densely-populated districts—often 400 to the square mile—the grain is grown largely for local con-



RICE.

sumption; in Burma there is a large acreage under rice, with a low density of population, and it is from this country the United Kingdom receives her chief supplies.

**Millet** is the prolific seed of a grass plant which supports millions of the people of India, China, and Egypt. It probably takes its name from the great number of grains carried by each ear, sometimes as many as a thousand (*mille*). In India and Egypt the grain is called *durra*. It is also cultivated in West Africa, Italy, and Germany. In Europe, millet is used chiefly as food for poultry.

**Potato.**—The potato, a native of South America, was introduced into Europe by the Spaniards about the middle of the sixteenth century. The cultivation of the root has steadily increased, and it is now a staple food in large areas of the temperate regions. Immense quantities are grown in Scotland, and in Ireland the failure of the crop entails famine for a large part of the peasant population.

France, Germany, and Austria very largely cultivate the potato. It has been introduced into India and China, but the plant thrives in tropical countries only at a height of several thousand feet above sea-level. *Starch*, often called English arrowroot, is manufactured from the potato, which also lends itself to the distilling of a cheap alcoholic spirit, especially in Germany.

Very welcome additions to the food-stuffs of European nations are *arrowroot*, *tapioca*, and *sago*. All three are highly nutritious, and largely used as food for invalids.

**Arrowroot** is a dry starchy substance yielded by the roots of various plants, chiefly in South America and the West Indies. Bermuda arrowroot is generally considered to be the best. It is also obtained in other parts of the world, but not from the same species of plant.

**Tapioca** is a coarse starchy powder obtained from the roots of the cassava plant (*manioc*). It is grown in South America and the Straits Settlements. Though tapioca is so nutritious, the liquid which is crushed out of the roots is a deadly poison.

**Sago** is the pith of the sago palm, but that of other palms is frequently employed. The tree is felled, the pith is extracted, and the starch is washed from it and dried for use. Sago and tapioca are granulated by making the starchy meal into a paste and forcing it through a sieve.

**Chestnuts.**—The peasants of Southern Europe grind chestnuts into flour, which makes very palatable bread. In Italy it is used in making a porridge called *polenta*.



THE SAGO PALM.

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### Miscellaneous Vegetable Productions.

**Sugar** enters largely into the food of nearly all peoples; in the United Kingdom the average annual consumption is quite 70 lbs. per head of the population.

Many vegetables and fruits yield sugar in small quantities,



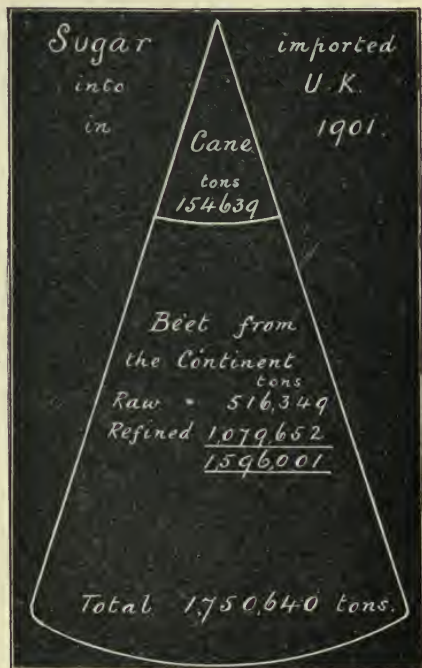
but the chief sources of the sugar of commerce are the sugar-cane and the beetroot.

*Sugar-cane.*—Originally a native of Asia, the plant is now grown in the East and West Indies and South America. It was introduced into the West Indies, and cultivated by slave labour for two centuries. In 1833 the abolition of slavery seriously retarded the industry, and it has never regained its former importance.

*Beet.*—During the time of the Napoleonic wars West Indian produce could not enter Europe owing to the raids of privateers. The beetroot was cultivated to take the place of the West Indian product. The industry has grown to such an extent that more than half of the world's sugar is produced from beet, which is largely grown on the Continent, especially in France and Germany. Recent experiments prove that beet can be grown in England, producing sugar equal in purity to that of Germany, where the cultivation of the root has reached a stage of the highest scientific success. The United Kingdom is the chief consumer of foreign sugar, but the time may come when British home-grown sugar shall find a place on the breakfast-table of the nation.

In Canada and the United States the *sugar maple* is largely cultivated.

Of 1,750,540 tons of sugar imported into the United Kingdom in 1901, little over 42,000 tons were obtained from



the British West Indies; the remainder was beet sugar, chiefly from—

	Tons.
Germany .....	756,000
France .....	454,000
Holland.....	140,000
Belgium.....	133,000

*Sugar Bounties.*—Germany, France, Austria, and the United States pay beet-sugar manufacturers a bounty on all exports. The United Kingdom is the principal open sugar market in the world, and the result of the bounty system has been to drive the cane sugar of British colonies practically out of the market. The countries, however, that pay the bounty reap so little benefit from it that there are now proposals for an agreement to a general abandonment.

**Fruit.**—The edible fruits of the world are very numerous, and in many regions form an important part of the food of the people. There are many delicious tropical fruits, as the banana, pineapple, bread-fruit, mango, etc. There is an immense local consumption of these fruits, but as there is a great demand in cooler regions for bananas and pineapples, they are largely cultivated for export.

In the warm temperate regions the grape vine, orange, lemon, fig, and olive flourish; and in the cooler latitudes the apple, pear, plum, cherry, gooseberry, and other useful fruits abound.

*Raisins*, or dried grapes, are an important article of commerce. Ordinary raisins are obtained in large quantities from Valencia in Spain, muscatels from Malaga, and sultanas from Smyrna (Asia Minor). Spain and Asia Minor supply the British market in about equal quantities.

*Currants* are dried grapes of a smaller variety, grown extensively in the islands of Greece. Over a million cwt. are imported into the United Kingdom annually.

*Figs.*—The fig tree is a native of Syria and Palestine, but is grown largely in Southern Europe, the Mediterranean islands, North Africa, and Asia Minor generally. Under favourable conditions the fig will ripen even in England. The British supply is obtained mainly from Turkey, Greece, and Asia Minor.

*Oranges.*—The orange is grown almost everywhere where the climate will allow—Southern Europe, North and South Africa, Mediterranean islands, the Azores, West Indies, California, Florida, and Australia. Of the  $8\frac{1}{2}$  million bushels imported into the United Kingdom, more than three-fourths are obtained from Spain.

The growth of the British fruit trade has been remarkable. Formerly dried fruits (raisin, currant, date, fig), together with oranges, lemons, and grapes from the Mediterranean countries, were the chief fruits imported into our country. Now there is no portion of the world that does not contribute to our wants. The fruit is packed in special cool chambers on board fast vessels. Distance presents no obstacles, and the fruit reaches our shores in as good condition as when it was gathered, perhaps 15,000 miles away. We receive apples, pears, and tomatoes of excellent quality from United States, Canada, Australia, and New Zealand; bananas and pineapples from West Indies and Straits Settlements; oranges, grapes, and nuts from Spain, other Mediterranean countries, and West Indies; apricots, peaches, and pineapples from California. Much fruit is also put up in hermetically-sealed tins, and imported into the United Kingdom in ever-increasing quantities.

**Spices** are aromatic vegetable condiments commonly used in the seasoning of food. The following are the best known.

*Pepper*, of which there are several varieties, is chiefly cultivated in India, Siam, and the East Indies. White pepper is obtained by removing the husk from the best black pepper. The whole berries are called peppercorns.

*Nutmegs*.—The nutmeg tree very much resembles the pear tree in size and foliage; it bears all the year round. The nutmeg is the kernel of the berry; the outer covering is *mace*. It is grown principally in the East Indies, especially Banda, to which island the Dutch unsuccessfully endeavoured to restrict the tree.

*Cloves* are the dried flower-buds of an evergreen tree found in the East Indies, particularly the Moluccas and Sumatra; it is also grown in East Africa (Zanzibar), Bourbon and Mauritius islands, and West Indies. In order to keep up the price of cloves, the Dutch exterminated the plant from all the East Indian islands except Amboyna. Other nations introduced the plant elsewhere with favourable results, but the cloves of the Moluccas still remain superior to all others.

*Ginger* is the root of a plant grown in tropical Asia and the East and West Indies, especially Jamaica. White and black ginger are obtained from the same plant, the difference in colour depending upon the method of treatment.

*Vanilla*, the fruit of a vine-like creeping plant, is obtained chiefly from Mexico and India. It is extensively used for confectionery purposes.

*Mustard* is not only an important condiment, but is also valu-

able in medicine. Holland, England, East Indies, and Asia Minor are the chief sources of supply.

**Dye-stuffs.**—There are innumerable dye plants, of which the most important are—

*Indigo*, the product of a shrub grown in tropical Africa, America, and Asia, especially India, which monopolizes a great

portion of the trade. It is a fine blue dye, which in recent years, however, has suffered largely from the competition of chemical and aniline dyes.

*Logwood*, *Brazilwood*, and *Fustic*—trees grown chiefly in Central America and the West Indies. They yield dyes used by dyers, printers, and hat and glove manufacturers.

*Madder*, grown in France, the Netherlands, Turkey, Greece, and Asia Minor. A red dye is extracted from the roots.

*Quercitron*, the crushed inner bark of a tree grown largely in the United States. It yields a yellow dye.

*Sumach*, cultivated in the south of Europe



GINGER PLANT.

and the Levant. It furnishes an orange-coloured dye used in tanning light-coloured leathers.

*Arnatto*, or *Arnotto*, a red dye extracted from the pulp of a tropical fruit. It is used in dyeing silks in France, and in colouring butter and cheese in England and Holland.

**Drugs.**—There are many plants and trees which possess valuable medicinal properties; those of chief importance are usually the products of tropical countries.

*Opium*, the dried juice of the poppy-head, is a useful narcotic; the poppy is cultivated in Egypt, Asia Minor, Persia, India, and



China. The drug is the white, milky juice which issues from incisions made in the plant. It hardens, and is worked up into cakes ready for use. It is extensively used for smoking in India, China, and Turkey.

*Cinchona*, or Peruvian Bark, is the bark of a tree native to the eastern slopes of the Andes, but now cultivated in India, Ceylon, and Java. It yields *quinine*, one of the most valuable of all medicines.

*Camomile* is a bitter aromatic plant, largely grown in England and on the Continent.

*Senna* is a very popular drug, largely imported into England from Egypt and India.

*Liquorice*, the product of a sweet root, is a valuable medicine for coughs and affections of the throat. It is grown largely in Spain, and when manufactured is popularly known as "Spanish juice."

Oils are usually obtained by pressure of the fruits and seeds, or by distillation.

*Palm oil* is obtained from the nuts of a tree common to the tropical regions of Asia, Africa, and America. It is the chief export of the Gold Coast and Niger regions; it is largely used in the manufacture of soap and candles. *Cocoa-nut oil* is used as a substitute for butter and for lighting purposes in tropical countries.

*Linseed*, *rapeseed*, and *cotton-seed* yield oils, the first of which is particularly suitable for preparations of paint and printing ink. The crushed seeds afterwards form oilcake for feeding cattle.

*Olive oil* is remarkably clear, and is used for lubricating delicate machinery, clocks, watches, etc. It is extensively produced in the Mediterranean countries, where it is used in various preparations of food.

*Castor Oil*.—The castor-oil plant, though a native of India, Africa, and West Indies, will grow in temperate regions. In the cooler regions it is an annual; in the warmer it becomes a tree thirty feet in height. The oil, expressed from the seeds without the application of heat, has important medicinal properties.

*Eucalyptus*.—The eucalyptus is an evergreen tree native to Australia, where there are 120 varieties. Some of the species attain a height of 400 feet, and yield useful timber. The leaves and the oil extracted from them possess valuable remedial properties in the treatment of bronchitis, asthma, etc. The tree has been introduced with great success into hot, swampy regions in

Italy and elsewhere to counteract malarial fever, and many former deadly haunts are now inhabitable.

**Tobacco.**—The tobacco plant is a native of America, but is now grown in nearly every tropical and temperate region of the globe. The countries yielding the greatest quantities are the United States, India, and Russia; and Germany, France, Turkey, Malaysia, and the West Indies are extensive growers of this popular narcotic.

In all parts of the world tobacco is heavily taxed, yielding



TOBACCO PLANT.

a large part of the revenue. In some countries, as France and Spain, the manufacture is entirely a government monopoly.

In 1901, in the United Kingdom, tobacco and snuff paid in duty over £12,000,000, or nearly half the total receipts from the customs.

Consumption of tobacco in the United Kingdom :—

Year.	Lbs.	Per head.	
		lbs.	oz.
1841.....	23,000,000.....	1	13 $\frac{3}{4}$
1871.....	42,000,000.....	1	5 $\frac{1}{2}$
1891.....	60,000,000.....	1	9 $\frac{1}{2}$
1900.....	80,000,000.....	1	15 $\frac{3}{4}$
1901.....	83,500,000.....	2	0 $\frac{1}{2}$

Out of a population of forty-one millions, it is calculated that only about one-fourth are smokers, the actual consumption per head thus being about 8 lbs. per smoker.

The tobacco of Cuba, and especially the cigars of Havana, are the best in the world. Much of the tobacco leaf used in the manufacture is obtained from other sources, and exported to Cuba to obtain enhanced prices.

The cigars of Manila (Philippine Islands) are highly esteemed, and the tobacco of Borneo is growing in favour. Serious attempts to cultivate tobacco in Ireland have met with considerable success. The leaf has proved to be of good, serviceable quality, and the net profit amounted to £172 per acre.

### Non-Alcoholic Drinks.

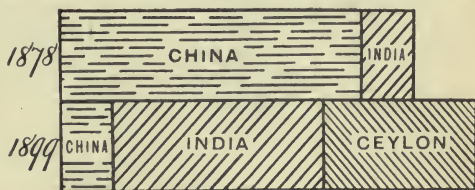
**Tea.**—The tea plant is a native of India and China. It is successfully grown in many parts of the world, but China, India, Ceylon, and Japan are the chief sources of the world's supply. Tea is of two kinds—black, and green. The difference in colour is

caused entirely by the method of preparing the leaves. To obtain *green tea*, the young leaves and tender shoots of the plant are dried over heated pans immediately

after gathering; in the case of *black tea*, the leaves are allowed to lie awhile before being dried.

Tea is a universal drink. The British consumption has grown from  $1\frac{1}{4}$  lbs. per head in 1840 to 6 lbs. in 1900.

China produces perhaps a million tons of tea per annum, most of which is for home consumption. The United Kingdom at one time almost entirely depended upon China for its supply of tea. Indian and Ceylon teas now almost monopolize our markets.



BRITISH TEA IMPORTS.

### TEA IMPORTED INTO UNITED KINGDOM (in million lbs.).

From	1878.	1899.	1900.
China.....	166.....	35.....	21
India.....	35.....	143.....	154
Ceylon.....	—.....	102.....	114
Other countries.....	4.....	9.....	10



A TEA PLANTATION.



**Coffee.**—Probably Arabia and Abyssinia were the original home of the coffee plant, the product of which was introduced into Europe about the middle of the seventeenth century. It is grown chiefly in Brazil, Java, and India. The east and west coast and Central Africa are also cultivating the plant with



BRANCH OF COFFEE TREE.

success. Coffee-planting was formerly a profitable occupation in Ceylon: in the year 1876 over 45,000 tons were exported. A strange disease, however, attacked the plants, and, in spite of all efforts to check its progress, completely paralyzed coffee-culture for some years.

Coffee is largely consumed by the peoples of North-Western Europe, America, Arabia, and Turkey. In the last-named country the consumption is very great, coffee taking the place of wine and other fermented drinks, which are prohibited by the Moslem religion.

**Cocoa**, which is prepared from the seeds of the cacao tree, is more nutritious than either tea or coffee. The cacao is a native of South America, but is also grown in Asia and Africa. Columbus introduced cocoa into Europe from America, and to this day it remains a popular beverage of Spain.

Chocolate is a manufactured product of the cacao. The cocoa beans supplied to British manufacturers are obtained chiefly from Venezuela, Ecuador, the Guianas, Brazil, and West Indies (Trinidad).

### Alcoholic Drinks.

**Wine.**—Of plants yielding material which by fermentation takes the form of alcohol, the *vine*, the fermented juice of which is wine, is by far the most important.

The countries of Central Europe and those of the Mediterranean grow over a thousand varieties of the vine for wine-making, and the manufacture of wine is an important industry. The vine has been introduced into Australia, South Africa, and California with remarkable success, and wines from these countries are imported largely into the United Kingdom. In the vine countries light wines are a popular drink, taking the place of beer in colder countries.

**Beer** takes the place of wine in most European countries north of 50°. The chief ingredient is *barley*, which is first converted into malt and then fermented. Hops are added to flavour the liquor. The *hop* succeeds best in the temperate regions of Europe, Asia, and America.

**Spirits**, of which there are many varieties, consist of diluted alcohol. In Germany and Holland spirits are largely obtained from the potato. Hempseed yields the Indian *bhang*; rye furnishes the Russian *vodka*; the plum provides the Bulgarian *raki*; and from the date, cocoa palm, and rice is produced the Asiatic *arrack*. Most of these spirits are of an exceedingly fiery nature, producing very evil effects on the people using them.

*Brandy* is distilled from wine and the husks of grapes.

*Whisky* is obtained by distillation from barley and sugar.

*Rum* is furnished by the fermented juice of the sugar-cane.

*Gin* is a distilled spirit flavoured with the berries of the juniper.

## Wood and Wood Products.

Properly speaking, the hard substance of which all trees are formed is *wood*. In commerce, however, the term is only applied to those woods of the smaller or ornamental trees (ash, walnut, birch, satinwood, ebony, mahogany, etc.) which yield the material for furniture and fancy articles. Those woods—as oak, teak, pine, elm, etc.—which are used in house and ship building, bridge and pier construction, are classed as *timber*.

The forests of the world bear evidence of the continual demand upon their resources. In some countries it has become necessary for the government to control them, to prevent their total destruction; and in many countries the forests are renewed by the systematic planting of young trees.

All trees of sufficient size to yield even poor material are used for various local purposes. Those trees, however, which furnish workable wood of high quality are in great demand, especially by civilized peoples whose native supply of timber is insufficient for their needs. The *pine*, *elm*, *fir*, *spruce*, and *larch* provide vast quantities of building timber, chiefly from Canada, United States, and Northern and Central Europe.

Pine timber is usually cut into planks and given the name “deals.” Red or yellow deals are generally pine, white deal chiefly spruce and fir.

The *oak* is found in Central Europe and British Isles, United States and Canada. *Teak*, valued for its strength and durability, is chiefly grown in the forests of India, Indo-China, and Java. This timber has largely taken the place of oak in shipbuilding. Insects avoid it, hence its usefulness for dwellings in tropical climates. The *red pine* of California, the *kauri pine* of New Zealand, and the *jarrah* of Australia are the giants of the vegetable world, some of them attaining a height of over two hundred and fifty feet; and all furnish valuable timber. The *ash* grows very rapidly in northern latitudes. The wood is tough, and useful for cart-building, wheels, hoops, etc. It is one of the few trees of which the United Kingdom grows sufficient for home consumption.

Of ornamental and furniture woods the *mahogany* is the best: it is a large and lofty tree, found chiefly in South America and the West Indies. The best “Spanish mahogany” is obtained from Hayti. *Maple* and *walnut* are important North American

woods. Walnut yields very handsome veneers. *Ebony* is usually of three qualities, obtained from widely-separated regions. That from Mauritius is the finest and most costly, the East Indian varieties are less valuable, and that from East and South Africa the poorest.

The *bamboo*, which grows throughout Eastern Asia and the Archipelago, is one of the most remarkable trees in the world. It is the largest of the grass tribe, and attains a height of from forty to fifty feet. Its stems are hollow and jointed, and coated with a smooth, hard glaze. It would be difficult to mention any article to which bamboo cannot be adapted: clothing, furniture, tools, boats, paper, baskets, buckets can be constructed from this accommodating material. The young shoots are used as a vegetable, and in times of dearth its seeds atone for a lack of rice.

Though there are several hundred varieties of the *palm*, less than a dozen are imported into the United Kingdom. The wood is usually soft, and but little adapted for cabinet purposes. Cocoa-nuts, dates, and oil are far more important than the wood. *Sandalwood*, which grows in Malabar, Ceylon, and various islands of the Pacific, is used for cabinet work, toys, and perfumes. Cedar wood is usually soft, red in colour, and fragrant. It is chiefly used in the manufacture of blacklead pencils.

**Cork.**—The bark of the cork oak is obtained from the south of Europe and from Algeria. The tree will flourish and renew its bark for one hundred and fifty years; if left undisturbed, it rarely exceeds sixty years. Spanish cork is the best, and in that country it is not uncommon for houses to be lined with this substance, as a preventive against damp.

Many trees and plants produce gums, resins, barks, drugs, oils, and other substances of great commercial value.

**Rubber.**—Indian rubber, or caoutchouc, is the hardened juice or sap of a considerable number of trees and plants. Brazilian rubber, which is obtained from a tree sixty feet high, is the best obtainable, and that of Mexico and Central America is of good quality. From incisions made in the trunk of the tree the juice is collected, and afterwards hardened in the sun or by means of fire. East Indian rubber is obtained from a tree very similar to the banyan, but that of West Africa is the product of a huge creeping plant.

In recent years there has been a greatly-increased call for rubber. To meet the demand, the natives, in many instances, not only tapped trees, but felled them wholesale, in order to ex-





COLLECTING INDIA-RUBBER.

tract the maximum amount of sap. Measures have been taken, wherever possible, to prevent this reckless destruction.

**Guttapercha** is the thickened milky sap of a tree growing chiefly in the Malayan Archipelago. It is used for a variety of purposes, but is invaluable in the construction of cables for submarine telegraphs.

**Tar** is a black, thick, oily substance yielded by the roots and branches of the fir tree, which are burnt in a roughly-made kiln. It is very useful in rendering cordage and wood impervious to the action of the atmosphere. *Pitch* is obtained by evaporating all water from tar. Both these substances are largely produced in the forest regions of Russia, Scandinavia, Germany, and France.

**Turpentine** is the resinous juice which is obtained from the incised trunks of fir trees. It has the appearance and consistency of honey, and is packed in barrels. *Spirits of turpentine* are obtained by distillation; this operation leaves behind a hard, brittle, inflammable substance known as *resin*.

**Camphor**.—Although there are several trees that yield this

substance, that which produces the camphor of commerce is a native of China, Japan, and Formosa. The peculiar penetrating scent of camphor renders it useful as a preventive against insects. The Chinese construct their boxes and trunks of the fragrant wood.

**Potash** and **Soda** are yielded in considerable quantities by many plants; as a rule, plants which grow inland produce potash, and those which grow near the sea-coast yield soda.

*Potash* is alkaline matter extracted from wood ashes. It is produced extensively in the forests of Russia, Germany, and America, from whence it is exported in large, gray-coloured masses. It is an important ingredient in the manufacture of glass and gunpowder, in the production of colours, and in bleaching and dyeing.

*Soda*, commercially known as barilla, is chiefly obtained by burning the ashes of sea-plants, sea-weeds, etc. The southern and western shores of Spain abound in a plant yielding excellent soda. In the United Kingdom and France sea-weed is used to produce much soda of a poorer quality. *Iodine* is also obtained by very much the same process.

### Textile Materials.

Grasses, leaves, vegetable fibres, the bark of trees, and other vegetable products yield material with which to form clothing. In uncivilized regions these products are used for clothing almost in their raw state; but after undergoing various processes of manufacture, they may be spun and woven into a great variety of clothing fabrics.

**Cotton.**—It is very generally considered that cotton was practically unknown in Europe before the last century, but, as a matter of fact, the cotton plant was cultivated in the south of Europe as far back as the thirteenth century; and a hundred years later the cotton stuffs of the south of Spain had gained a name for excellence.

Herodotus, in writing about India B.C. 445, refers to cotton under the name "tree-wool," and there is no doubt the plant has been cultivated in India from time immemorial; it was known to the Egyptians six centuries before the Christian era. There is every reason to believe that cotton is the basis of one of the oldest manufactures in the world, and it has certainly contributed largely to the position our own country has attained among the manufacturing nations of the earth.

It is impossible to fix the original habitat of cotton, but it is grown successfully in the hot parts of both the Old and the New World. There are four varieties of cotton plant of particular commercial importance :—

1. *Herbaceous cotton*, which is grown in India, China, Arabia, Egypt, and Asia Minor. It is an annual, grows to a height of five or six feet, bears a yellow flower, and yields a short staple.



COTTON PLANT.

2. *Tree cotton*, which grows in India, China, Arabia, and Egypt. It attains a height of from fifteen to twenty feet, has a red flower, and yields a silky material of fine texture.

3. *Hairy cotton*, which grows to a height of six or seven feet, and bears a whitish flower and hairy pods. American cotton is usually of this variety.

4. *Sea island cotton*, which is chiefly grown on the shores of Georgia and Florida. It grows to a height of fifteen feet, bears a yellow flower, and yields a fine silky wool.

The cotton of commerce, however, is not usually known according to its botanical classification, but takes the name of the country or district from which it comes.

The plant from which most of our supplies are obtained is an annual. The seed is sown in spring, and the plant matures and dies down in autumn. The flower dies, and leaves behind it a pod about the size of a walnut, which contains a mass of cotton wool, in the midst of which the seeds are embedded. When the plant is quite ripe the pod bursts, and the crop is then gathered by hand. The complete contents of the pod or boll are carefully pulled out by the picker, who collects as much as 200 lbs. in a day's work.

To free the fibres from the seeds the cotton is passed through a machine, in which knives separate the seeds from the fibres. This process is called "ginning." When crushed, the seeds yield oil, which is largely used in the manufacture of soap, candles, etc. The husks and refuse are pressed into flat cakes, which form a nutritious food for cattle.

The loose or raw cotton—which at the present time is worth from 3d. to 20d. per lb., according to quality—is next pressed by hydraulic pressure into bales of about 500 lbs., and in that state reaches this country.

#### COTTON PRODUCTION.

Country.	Bales.	
	1898-99.	1899-1900.
United States .....	11,078,000	9,137,000
India .....	2,245,829	1,562,000
Egypt .....	1,098,596	1,228,000
Brazil, etc .....	176,196	250,000
Total.....	14,598,621	12,177,000

Lancashire is vitally interested in the question of the cotton supply. For some years, spinners, manufacturers, and merchants have been hampered by a scarcity of long and medium staples. Spindles have multiplied so rapidly in different parts of the world, that an increased supply of cotton has become an absolute necessity.

With a view to improving the supply, an association has been



formed whose principal object will be the extension of the growth and cultivation of cotton in British colonies, dependencies, and protectorates. The association distributes seed amongst the natives, and encourages them, by advice and assistance, to grow cotton on their own land; and where necessary, land is acquired on which to establish plantations and conduct experiments.

It is almost certain that the area of cotton lands in India will be considerably extended, but the quality of Indian cotton rarely compares favourably with that of America. The long and fine staples of Egypt are in increasing demand, but there is little hope of a much larger supply unless the government will undertake to drain the salt marshes of the Delta, and that would probably take ten years to accomplish.

Those best qualified to judge look to West and East Africa to furnish the extra raw product required. The older settlements already produce cotton in paying quantities, and in Nigeria and Uganda there are immense areas awaiting the capital and enterprise of the planter.

**Flax** is the chief vegetable fibre of the Old World, affording material to be spun and woven into linen thread, cloth, lawn, cambric, lace, etc. North Germany and Russia provide nearly three-fourths of the whole supply of flax. The cultivation of the plant in Ireland and Scotland is gradually decreasing, owing to the abundance and cheapness of the foreign product.

**Jute** is almost entirely an Indian product, but has been introduced into Egypt and the southern United States. It succeeds only in a warm and moist climate. The fibre is used in the manufacture of cordage, carpets, and coarse gunny cloth used for cotton-bale covers, rice and wheat sacks, etc., but it is also of sufficiently fine texture to be mixed with silk.

**Hemp**.—Though a native of Central and Western Asia, hemp is extensively cultivated in many countries. It yields a tough, strong fibre, invaluable for ropes and cables, and no other material can compete with it for making sailcloth. Italian, Russian, and Manila hemp are of chief commercial importance.

Central America, Bahamas, New Zealand, and Northern Africa also produce hemp and other fibres of a coarser quality. The fibres of *sisal grass*, increasingly cultivated in the Bahamas, are particularly useful in rope making, since the material resists damp even more than hemp. *Coir* is the fibrous hemp-like substance obtained from the husk of the cocoa-nut. It is used for boat ropes, mats, and brushes.

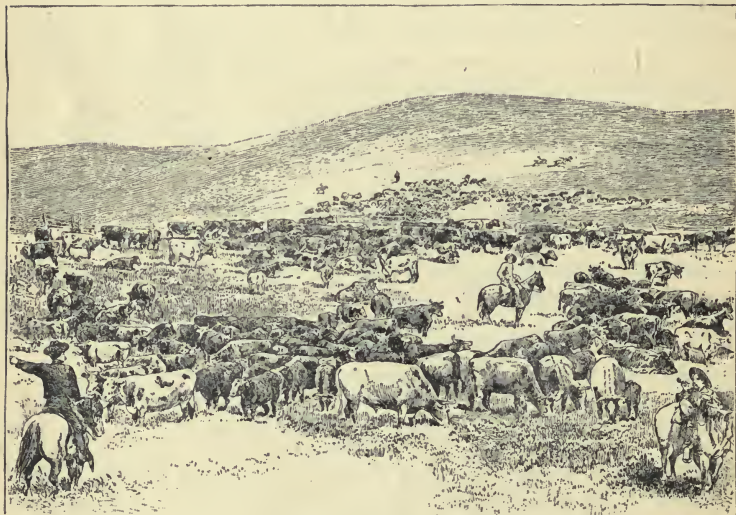


## CHAPTER III.

### ANIMAL PRODUCTIONS.

“WHATEVER the animal kingdom can afford for our food and clothing, for our tools, weapons, or ornaments—whatever the lower creation can contribute to our wants, our comforts, or our pride, that we sternly exact.”

All animals do not serve us for food ; but whether wild or



CATTLE RANCHE.

domesticated, their skins, hides, fur, wool, bones, horns, fats, and oils have a distinct economic and commercial value.

**Beasts of Burden** vary in different parts of the globe, chiefly according to the configuration of countries and their climatic conditions. The horse is *par excellence* the principal beast of burden, except in the far North. The native home of the animal is uncertain. It is now found only in a domesticated state except in America, Australia, and some parts of Asia, where the descendants of once domesticated horses run wild in troops. In Russia, the United States, and Argentine the animals are herded on the plains; at intervals they are "rounded up," that the ranchmen may select the beasts most suitable for market. Other beasts of burden will be more particularly described in the chapter dealing with land transport.

Particulars of the raising of live stock in the chief countries are appended (million head—approximate):—

1899-1900.

Country.	Cattle.	Sheep.	Pigs.	Horses.
Argentine.....	21	74	$\frac{3}{4}$	4
Australasia.....	12	100	1	2
Austria.....	15	11	10	4
Canada.....	3	2	2	$\frac{3}{4}$
France.....	13	21	6	3
Germany.....	18	11	14	4
India.....	48	17	...	1
Russia.....	24	44	10	20
United Kingdom.....	11	31	4	2
United States.....	44	39	38	14
Uruguay.....	5	14	...	$\frac{1}{4}$

## Meat.

The flesh of many wild animals provides food for local consumption, but the meat supply of the world practically depends upon the domestic animals—**cattle, sheep, goats, and pigs.**

In the industrial centres of the temperate regions the populations have enormously increased; and it would have been impossible to satisfy the demand for meat, especially in face of decreasing facilities for rearing cattle, had it not been for the vast numbers of cattle and sheep available from thinly-populated regions, where pasture is cheap and abundant.

Immense quantities of meat are preserved in tins, and the canning industry of the United States in particular has assumed gigantic proportions.

Beef is far more popular than mutton, Austria-Hungary being almost the only country where the latter is generally preferred. There is an enormous demand for meat extracts for stimulating drinks.

The **camel**, chiefly in Arabia and Egypt, and the **reindeer**, in the Arctic regions, are particularly valuable to the inhabitants. Wealth is counted in these animals; for not only are they beasts of burden, but their milk, flesh, hides, and hair satisfy many material wants.

More than any other country, the United Kingdom depends upon foreign sources for its meat supply. *Cattle*, *sheep*, and *pigs* are imported from the United States, Canada, and the Argentine Republic. *Beef*, *mutton*, and *pork* (chilled and frozen) are obtained from the same countries. Australia and New Zealand furnish fresh *frozen mutton*; live animals cannot be transported so far with anything approaching success—75 per cent. die during the passage. *Bacon* and *hams* are supplied by the United States and Canada.

Meat is preserved in various ways during the ocean passage. Chilled meat is kept cool by the constant circulation of air passing over ice. Much meat is absolutely frozen, especially the mutton of Australasia. So perfect is the refrigerating machinery, that a three months' voyage by a sailing vessel does not adversely affect the meat.

### Dairy Produce.

Dairy farming is common to nearly all civilized countries, some of which are specially noted for the excellence of their productions. In the United Kingdom the industry does not receive the attention it merits, and much dairy produce is in consequence imported from abroad.

Vast quantities of **butter** are supplied by Denmark, Holland, France, Canada, Sweden, Australia, and New Zealand. *Margarine*, a product of purified animal fat, is largely replacing butter, which it closely resembles; it is cheaper, and almost equally palatable.

**Cheese**.—The chief sources of the British supply are Canada, United States, and Holland. *Gorgonzola* and *Parmesan cheese* from Italy, *Westphalian* from Germany, and *Swiss cheese* are popular in England.

**Milk** is preserved in tins by the addition of sugar, and by evaporation to half its bulk. In Switzerland and Sweden "condensed milk" is an important export.

**Eggs.**—The eggs of the common fowl are an important food product. In the United Kingdom the home supply is not nearly equal to the demand, and in 1900 over 2,025 million eggs were imported from foreign countries.

The following were the countries, and the values supplied by each :—

Russia.....	£1,109,500
Germany.....	1,016,700
Denmark.....	923,500
France.....	868,100
Belgium.....	733,400
Other countries.....	750,000
	£5,400,200

Since 1892 the import of eggs into the United Kingdom has almost doubled.

### Miscellaneous Animal Products.

**Skins and Hides.**—The former term refers to the coverings of the smaller animals; the latter to the skins of large animals. All are useful in the preparation of *leather*, especially those of the domestic animals. The coats of many wild animals are in great request for winter garments, notably the bear, wolf, fox, lynx, ermine, sable, minx, chinchilla, beaver, hare, rabbit, squirrel, etc. Ermine is the most valuable **fur**, and is used in the royal garments of most European monarchs. Sable ranks next in value. Our native supply of rabbit skins is by no means inconsiderable, but every year vast quantities from abroad are imported. Introduced into Australia, the rabbit has multiplied to such an extent as to become a scourge. Millions of skins are exported to the mother country. Sheep and goat skins are used extensively in the gloving industry. The supply of hides of the elephant, rhinoceros, and alligator, etc., and skins of the lion, tiger, leopard, etc., fluctuates very considerably.

**Bones, hoofs, and horns** furnish material for the manufacture of numerous small articles, as knife-handles, buttons, combs, etc.; they are also used in the preparation of glue, gelatine, and animal charcoal. Bones that are too small or unsuitable for manufacturing purposes are ground up to form an excellent manure.

**Ivory.**—Elephants' tusks provide the greater amount of available ivory, although a little is yielded by the hippopotamus and walrus. Of the annual yield, about three-fourths is obtained from the African elephant, whose tusks are sometimes nine feet long



and 160 lbs. in weight. The average weight of tusks, whether African or Indian, is not more than 50 lbs. The supply is decreasing, the animal having been almost exterminated in some regions. Along the shores of the Arctic Ocean is obtained *fossil ivory* of the extinct mammoth. Tusks 12 feet in length and 200 lbs. weight are occasionally discovered.

This product of pre-historic times is found in sufficient quantity and quality to make it of commercial importance.



THE OSTRICH.

## Birds.

Although almost without exception the flesh of birds is a useful food product, only the domestic fowl, duck, turkey, goose, and various game birds, as the pheasant and partridge, are of more than local importance.

**Feathers** are obtained in enormous quantities from domestic fowls, and also from the myriads of seabirds that visit certain regions during the breeding seasons. The down of the *eider duck* is collected in the Lofoden Islands, Iceland, and other lonely spots in northern latitudes; it reaches the market in balls little bigger than a man's hand, but so tightly wrapped that the weight may be three pounds.

One ball opened out and expanded by heat will provide sufficient down to make a bed for two persons. There is a great demand for *ornamental feathers*, chiefly for millinery purposes. Of this class the most important are those of the *ostrich*, the best of which are worth from seven to ten guineas per pound. In South Africa, Australia, and California there are ostrich farms where the birds are reared and periodically denuded of their feathers; North



Africa and Syria supply fine specimens. The *skins* of birds of brilliant plumage always find a ready market, and are chiefly used for decorating ladies' and children's hats, and in the construction of artificial flowers.

**Guano** is the decomposed excrement of birds, found on small islands in the Southern Ocean, and especially along the coast of Chili and Peru. The beds of guano are sometimes from fifty to sixty feet in thickness. It is a valuable fertilizing agent, but the deposits are becoming exhausted.

### Fish.

Fish is an important article of food with maritime peoples and in the neighbourhood of large inland waters. The "harvest of the sea" varies greatly, according to the climatic conditions and the presence of fish foods. Although fishing is general on all the coasts, there are certain areas where fish particularly abound, and where the fishing industry assumes large proportions. The two richest fishing districts in the world are the North Sea and along the North American coast from New York to Labrador.

The **North Sea** fisheries are exploited chiefly by the fishermen of the United Kingdom, Holland, Denmark, and Scandinavia. Each country claims absolute fishing rights within three miles of its own coast; elsewhere it is open to all. The chief fish of the North Sea are *herring*, *cod*, *mackerel*, *sole*, *plaice*, *haddock*, and *whiting*. The ocean between Europe and Iceland is also a rich fishing ground.

The **North American** fisheries include the same species of fish. The Grand Banks of Newfoundland are the seat of the greatest *cod fishery* in the world; the season lasts from June to November, and even vessels from Europe are largely employed. As many as 5,000 vessels are engaged, and the annual catch exceeds £4,000,000 in value. Much of the cod is exported to Europe and South America, for consumption during the fasts of the Roman Catholic Church. *Cod-liver oil* is extracted from the fresh liver of the cod. The finest is invaluable in medicine; the coarser kinds are used in the preparation of leather. The cod, herrings, lobsters, etc., of Nova Scotia and New Brunswick form about half the value of the Canadian fisheries.

On the **Pacific coast**, especially of British Columbia, *salmon fishing* is very important. The rivers Fraser and Columbia teem with this highly-esteemed fish, which is canned and exported in

vast quantities. Salmon-fishing on a smaller scale is carried on in Norway and several rivers in the United Kingdom.

The **Mediterranean** fisheries are largely concerned in the sardine, anchovy, and tunny.

In the **Caspian** and **Black Seas** the *sturgeon* is abundant and important. The roe of this fish when dried, salted, and treated with vinegar is pressed into cakes, forming the delicacy known as *caviare*. *Isinglass*, a very pure form of gelatine or glue, is another product; it is used in cookery, and also to clarify wines and spirits. Russian *caviare* and *isinglass* are superior to any others.

**Shellfish**—oysters, crabs, lobsters—are found principally on the shores of the north temperate seas.

**Seals.**—There are many varieties of this marine animal. It is found chiefly in the Arctic and Antarctic seas, and is valued for its oil, bones, and skin. Seals frequent the shores of Greenland and Spitzbergen, but the most noted fishery is in the Behring Sea (Pribyloff Islands). Hundreds of thousands are captured every year. The seal most sought is the bladder-nosed variety; not only is its blubber larger and better than any other, but underneath its outside coat of bristly hair lies a thick, black, woolly coat greatly in request for sealskin coats, muffs, hats, etc. Indiscriminate fishing has threatened the extermination of these animals, but a compulsory close season and the prohibition of the use of firearms have removed the danger.

**Whales.**—The whale is the largest of existing animals. Those of chief commercial importance are the *Greenland* or *whalebone whale*, which is rarely found outside the Arctic Circle, and the *spermaceti whale*, which inhabits the Southern Ocean; other less important species are found in the Indian and Pacific Oceans. All whales yield oil, but that of the *spermaceti* is the best. *Whalebone* is valuable owing to its scarcity; £2,000 per ton is no uncommon price for this commodity. Hull and Peterhead are engaged in the northern fishery, and Tasmanian ports are interested in that of the Southern Ocean.

**Sponges** are found in all seas, from the Equator to the Poles. Those best known to commerce are obtained from the Mediterranean and the West Indies. The islands of the Grecian Archipelago and the Levant yield toilet sponges of fine quality; those off the north coast of Africa are of coarser texture. American sponges are noted for size rather than quality, especially those from the Bahamas and the coast of Florida. Smyrna is the great sponge market.



FISHING ON THE GREAT BANKS.

**Pearls.**—Several species of shellfish yield pearls, the *pearl oyster* being by far the most important. The most notable pearl-fisheries are off the western coast of Ceylon, followed closely by those of the Persian Gulf (Bahrein Islands), Coromandel coast of India, Bay of Panama, Torres Straits, and Western Australia. The collection of shells the inner coating of which is *mother of pearl* is an important industry, especially in Australian waters. The iridescent material is used in the manufacture of fancy articles (Paris and Vienna).

**Coral** is dived and dredged for in the Mediterranean, Red Sea, Persian Gulf, and around various islands in the Pacific. Size and colour determine the value of corals, some being worth £10 an ounce. A variety of ornamental articles is produced from coral; Naples is one of the chief seats of the industry.

### Insects.

The **bee** provides *honey* and *wax*. Apiculture is receiving increased attention in the British Islands, but a great quantity of honey and wax is imported every year. Canada, Africa, and India send considerable amounts, but California promises to become the chief honey-producing region of the world.

The **lac** insect is found in India and the East Indies. It exudes a milky juice which when dried resembles irregular masses of a resinous-looking substance. Lac is used in the preparation of dye-stuffs, sealing-wax, varnish, and lacquer.

The **cochineal**, a native of Mexico, has been introduced into Europe with great success, while in India and the East it has met with comparative failure. The insects, which feed upon different varieties of the cactus, are collected in bags, killed by hot water, and dried in the sun. Carmine and lake are the chief dye matters obtained by crushing and grinding the dried insects. The annual consumption of cochineal is quite 600 tons, most of which is contributed by Mexico, Central America, and Brazil.

### Textile Materials.

**Wool** is the soft, fine, curly hair which forms the coat of the sheep and a few other animals. It ranks very high among textile substances, and is the most important material for clothing in cold and temperate climates. Of all the varieties of sheep, the *merino* yields the finest wool. Originally the animal was peculiar





SHEARING TIME.

to Spain, but is now found almost all over the world ; Australia, North and South America, South Africa, and Russia are noted for their immense flocks. Wherever sheep-rearing is possible on an extensive scale, the production of wool is a far more important consideration than that of meat.

In the United Kingdom the woollen industry is second only



to that of cotton; the native supply of wool is insufficient to supply the mills by 700,000,000 lbs. The manufacture of woollen goods is also important in France, United States, Germany, and Belgium.

**Mohair** is the long, silky hair of the Angora goat. Formerly our supplies came wholly from Asia Minor, but now the animal is reared in larger numbers in South Africa, Australia, and south United States.

The *alpaca*, or llama, is found wild as well as domesticated in the Andes countries. Its wool is long, soft, and silky, and the fibre is very elastic. Sir Titus Salt was the first to correctly appraise the value of the commodity, and in 1853 he erected a factory at Saltaire, in Yorkshire, for the production of alpaca and mohair fabrics; the factory covers twelve acres, and employs 3,000 hands. All attempts to introduce the alpaca into Europe and Australia have met with complete failure.

The *camel*, *Cashmere goat*, and *vicuña* yield wool and hair of more than ordinary value. The last named is a South American animal, closely allied to the alpaca. Vicuña cloth is of very soft, fine texture.

**Hair** of all kinds is a useful material in numerous branches of industry. *Horsehair* is largely imported into the United Kingdom from South America and Russia: it is chiefly woven into upholstering fabrics. There is a steady demand for *human hair*, which is worth from 30 shillings to 60 shillings per pound. The peasant girls of France and Germany frequently sell their tresses to the hair merchant. The *bristles* of swine are of great use in the manufacture of brushes. Russian bristles are the best, and the imports into the United Kingdom sometimes amount to several million pounds per annum.

**Silk**, the strongest and most lustrous textile fibre, is obtained from the cocoons of the silkworm. The worm feeds upon the leaves of the mulberry tree; hence the production of raw silk is confined to the regions where the mulberry flourishes. China and Japan, Italy, Asia Minor, and France are the chief sources of supply, and in a lesser degree the Mediterranean regions generally, Switzerland, Persia, and India.

## CHAPTER IV.

### MINERAL PRODUCTIONS.

**Iron.**—Of all metals, iron is the most indispensable, and its production is one of the main roots of all industrial activity. Fortunately, it is very widely distributed, and there is scarcely any part of the world where iron ores of more or less value do not exist.

The chief iron ores are the *magnetic*, *hematite*, *spathic*, *clay-band*, and *blackband* varieties. The utility of the ores mainly depends upon the proximity of fuels with which to smelt them, or the ease with which they may be transferred to countries that do not possess them. Magnetic ore is the richest, and produces the finest qualities of metal. The clay ores are the poorest in quality, yet in Great Britain they furnish quite two-thirds of the total yield of native iron.

Marketable iron is of three forms—(1) *cast-iron*, (2) *wrought-iron*, (3) *steel*.

Cast-iron (pig-iron the commonest form) is brittle, easily fusible, and cannot be forged or welded; wrought-iron—the product of a further stage—is malleable and ductile, and fusible only under great heat; steel is also malleable, and attains a sufficient degree of hardness to cut wrought-iron with ease.

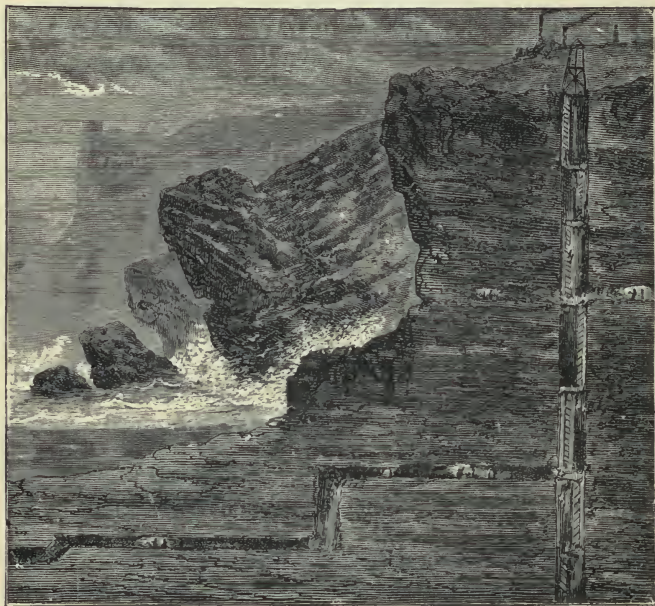
Wrought-iron is obtained by puddling pig-iron, which is the product of the blast furnace; steel was formerly obtained from wrought-iron, but improved processes now allow its production direct from pig-iron.

The United States, Great Britain, Germany, France, and Belgium take the lead in the production of iron. In 1900, the world's output of pig-iron amounted to 42,000,000 tons, of which the United States and Great Britain contributed more than one-half.

In some parts of the world there are mountains of remarkably

pure ore, but their situation renders them of little value. Belle Isle iron mine (Newfoundland) is really an open quarry three miles long and a quarter of a mile broad, from which red hematite is dug with the greatest ease. There are 20,000,000 tons of ore in sight, and as it lies on a great ocean route, it can easily be transported to Britain and elsewhere.

**Copper** is so malleable, ductile, and tenacious, that it is next in importance to iron. It is used largely for domestic utensils ;



SECTION OF A COPPER-MINE, CORNWALL.

as an alloy to harden gold and silver ; as a sheathing metal for ships ; and it enters into the composition of brass, bronze, gun and bell metal. For electrical apparatus and telegraph construction there is a constant and increasing demand for this metal.

Copper is occasionally found almost in a pure state, but generally in conjunction with oxides, carbonates, or sulphides. Sulphur ores are the most difficult to purify, and in the process the fumes are converted into sulphuric acid.

Almost pure copper is obtained from the shores of Lake Superior and Bolivia, but the metal is most abundant in the United States, Spain, Germany, and Japan. Copper ore was mined extensively in Australia until the discovery of gold caused it to be neglected. The Cornwall mines, once so famous, are now of little importance. Ore in small quantities is mined in the Wicklow Hills, Flintshire, and a few other places in the United Kingdom.

## COPPER PRODUCTION, 1899.

	Tons.
United States.....	265,000
Germany.....	34,000
Chili.....	25,000
Japan.....	21,000

Lead is soft, durable, and very easily fused. Its adaptable qualities render it specially useful for roofing, lining water cisterns, for plumbing purposes generally, and for shot and bullets. Its oxides yield red and white leads, of great use to the painter, and sugar of lead, invaluable to the chemist. These lead products are highly poisonous, and lead-poisoning is a distressing complaint, to which all workers in lead-smelting, lead-glazing (pottery), etc., are very liable.

The metal is usually found in combination with either sulphur or silver. The most common ore is *galena*, which usually contains sufficient silver to make its extraction profitable.

## LEAD PRODUCTION, 1899.

	Tons.
United States.....	189,000
Spain.....	188,000
Germany.....	129,000
Mexico.....	67,000

Other countries of lesser importance are Australia, Great Britain, Greece, and Italy.

Tin can be put to almost innumerable uses. It is used in tinning or coating other metals, iron thus treated forming *tin-plate*; and it enters into the composition of pewter, solder, type metal, etc. The tin mines of Cornwall are still productive, notwithstanding they have been worked for two thousand years; Bolivia and Australia also yield considerable quantities. More than half the whole supply of tin is obtained from the Malay Peninsula and adjacent islands, especially Banca and Billiton.



Malay tin is not usually mined; it is collected from the gravel of the river-valleys, where the tropical rains have washed it from the tin-bearing rocks in the more elevated regions.

### TIN PRODUCTION, 1900.

	Tons.
Straits Settlements .....	46,000
Banca.....	13,000
Billiton .....	6,000
Bolivia.....	4,000
Cornwall.....	4,000

**Zinc** does not rust or corrode, and is largely used for coating or galvanizing iron, and also in the manufacture of brass. It is cheaper than lead, and is extensively adopted in plumbing operations. Of a total yield of 495,000 tons in 1899, more than half was produced by Germany and the United States; France, Spain, and Great Britain rank next.

**Nickel** is chiefly used to form alloys. In conjunction with copper, the metal known as *German silver* is formed; in combination with steel, it is valuable for armour-plates. It is also used for the small coins of various countries, and for coating the inside of metal cooking utensils. The United States, New Caledonia, and Germany are the chief sources of supply.

**Manganese** is a very brittle metal, used in the preparation of certain kinds of steel, and also in glazing porcelain and glass. *Oxygen gas* is also largely produced from this substance. The ore very much resembles iron ore, and is chiefly obtained from the United States, Chili, Caucasus regions, Hartz Mountains, and Great Britain.

**Aluminium** is practically a new metal, extracted from various common clays. It greatly resembles silver, and is marked by strength, ductility, and lightness. It is extensively used in making scientific instruments, cycles, etc. *Aluminium bronze* is an alloy of nine parts of copper to one of aluminium. It is used in the manufacture of cheap jewellery in imitation of gold. The United States, Switzerland, France, and Great Britain are the chief sources of production.

**Salt** is a universal requirement, and is very widely diffused. It occurs in various forms: the waters of the ocean contain an illimitable supply; salt-water lakes and brine springs exist in many parts of the world; in some hot, rainless regions are deserts of salt; and rock salt is mined extensively in England and on the Continent. Salt is obtained from the sea by evaporation;

France and Spain obtain 500,000 tons per annum in this manner. In Russia the salt is obtained from the brine by intense cold; the ice is continually removed until only the salt remains. Natural brine is usually obtained by boring. In the Cheshire salt district, fresh water is pumped into the mines of rock salt. The water is rapidly impregnated with salt, and is then pumped out and evaporated. *Soda* is now largely made from salt.

Great Britain's annual yield is quite 2,000,000 tons, almost entirely from Cheshire and Worcestershire. Russia, Germany, and Austria possess important salt-mines.

**Sulphur** is generally found in a nearly pure state, especially in volcanic regions, as Naples, Sicily, Iceland, Java. Elsewhere it occurs in combination with other minerals. It is used extensively in the manufacture of gunpowder, but *sulphuric acid* is the chief product of sulphur. Most of the sulphur of commerce is obtained from Sicily.

**Graphite**, or **Plumbago**, commonly called *blacklead*, is almost a pure carbon. It is largely employed in the manufacture of lead pencils, in polishing ironwork, and in lubricating machinery. It is mined in Ceylon, India, Bavaria, and Spain; the mines at Borrowdale in Cumberland have been worked since the reign of Queen Elizabeth.

**Asbestos** is a fibrous, incombustible substance, used mainly in the manufacture of fireproof fabrics, and the packing of the joints of steam-engines and machinery, where great heat is encountered. Canada, the United States, and Italy yield the greatest quantities.

## Mineral Fuel.

Commodities which are available for fuel are of the utmost importance to man. Not only are they of great use in colder climates to produce warmth, but to yield the heat necessary to generate the steam for driving machinery engaged in our manufactures.

**Coal**, of which there are several varieties, is the chief mineral fuel. It occurs over nearly all the world, though there are regions which are quite destitute of it. Quite four-fifths of the whole production of coal are raised in Great Britain, the United States, and Germany.

The United States is already outstripping Great Britain in production, though as recently as 1887 the total yield was only 116,000,000 tons. Much American coal is as good as, if not better

UNITED STATES	240,965,917	
UNITED KINGDOM	225,181,300	
GERMANY	147,147,558	„
FRANCE	33,270,000	„
AUSTRIA-HUNGARY	32,673,249	„
BELGIUM	22,976,700	„
RUSSIA	15,652,482	„
OTHER COUNTRIES	32,132,794	„
TOTAL		750,000,000 tons

THE WORLD'S COAL CROP, 1900.

than, the best Welsh, and it is certain that the United States will make a bold bid for a share in the coal trade of the world. It is remarkable that the American collier raises 490 tons per annum, whereas his *confrère* in the United Kingdom raises only 290 tons ; but coal measures in America are easier of access than ours, if only from the fact that but little inroad has been made on her resources.

The exploitation of coal-fields in other parts of the world will receive greater attention than hitherto : for example, it is stated that large fields of excellent coal exist in Morocco, which is only four days' steaming from the south of England.

There are evidences that Australian coal may be largely used for shipping purposes in the far East, as it can be delivered at Hong-Kong at about half the price of British. It is objected that this coal cannot compete with best Welsh in that it is not smokeless ; but there is a limit to the price that can be paid for the advantage of freedom from smoke, even in the navy.

### Mineral Oils.

**Petroleum** possesses valuable heating, lighting, and lubricating qualities. It is a brown liquid, procured in various parts of the

world, but nowhere in such abundance as the United States and South-Eastern Russia, where quite five-sixths of the world's total yield is produced. The Pennsylvanian oil-fields yield about 30,000,000 barrels annually—an output which is exceeded in the Baku regions. Texas yielded about 1,500,000 barrels annually until the year 1900, when further supplies were discovered producing 60,000 barrels per day. The demand for petroleum is very general. It is not only useful for lighting purposes, but is a valuable fuel. It has long been used in the railway engines of Southern Russia, and in the steamers of the Caspian Sea. Factories in Pennsylvania and Ohio use it largely, and it is claimed that it causes less wear and tear to the boilers and furnaces. Petroleum is also found in Canada, Burma, and Galicia. *Naphtha*, a product of petroleum, is used for lighting purposes, and in the manufacture of india-rubber articles.

**Asphalt** is a solid bituminous substance of a dark-brown colour. In Trinidad there is a lake of asphalt; it is also found on the shores of the Dead Sea, in Italy, the United States, Mexico, Peru, and Cuba. Mixed with sand and gravel, asphalt forms an excellent paving material. It is melted and laid down whilst hot; when cold it forms a hard, durable surface.

### Precious Metals.

**Gold** is of a bright yellow colour, and the most malleable and ductile of all metals. The atmosphere, fire, and ordinary acids do not affect its colour. A small grain can be drawn out into hundreds of feet of fine wire, or beaten out into a leaf  $\frac{1}{80000}$  part of an inch in thickness. The foremost use of gold is for coinage and articles of luxurious ornament; even barbarous peoples have used gold as a medium of exchange from times immemorial. The metal is too soft to use in an unalloyed condition; it is hardened by the addition of silver or copper. Gold is almost as widely distributed as iron, but in many cases not in sufficient quantity to make its collection payable. It is usually found in a purer state than any other metal. Chemicals are largely used in separating the gold from foreign matter; another method is by washing the gold-bearing earth or crushed rock, the water carrying away the lighter material, leaving the metal behind. Occasionally it is found in rounded masses called “nuggets;” one found in Australia weighed 184 lbs., and contained 99 per cent. of gold. The principal gold-bearing regions of the world are the Transvaal Colony, Australia



and New Zealand, California, Russia, Mexico and Central America, Canada, South America, East Indies, and many parts of Africa—especially the west coast. In 1899 the total yield of gold was 15,000,000 oz., worth 62 millions sterling.

**Silver**, though a precious metal, is twenty times less valuable than gold. It is white in colour, and very malleable and ductile. It is put to almost exactly the same uses as gold. British silver coins consist of about 12 parts silver and 1 copper. Silver rarely occurs in a pure state, but oftenest combined with lead or sulphur. It is usually obtained from veins in rock, and is separated from the accompanying matter by crushing and treatment with chemicals. The chief sources of supply are the United States, Mexico, Germany, Bolivia, Peru, California, Spain, Hungary, and various parts of the British Empire.

**Mercury**, or **Quicksilver**, is the only metal in a fluid condition at ordinary temperatures, only becoming solid at 39° below zero (Fahr.). The uses of mercury are many and important. It is used in separating gold and silver from their ores, and is invaluable in the construction of the barometer and thermometer; it is useful in silvering the backs of mirrors, and it possesses unique medicinal properties. The yield fluctuates considerably, and the price in consequence varies a great deal, being five times higher at one time than at another. Almaden mine in Spain is probably the richest in the world, closely followed by New Almaden and others in California. Idria in Austria, Italy, Peru, and Germany supply smaller quantities of the metal.

**Platinum** is a rare and valuable metal. It is very infusible, and remains unaffected in the strongest heat of a blast furnace. The Russians formerly used it in their coinage; it is now chiefly used in the construction of chemical apparatus, crucibles, the tips of lightning conductors, etc. The metal, which does not occur pure, is obtained chiefly from the Ural Mountains, Spain, Borneo, and Ceylon.

### Precious Stones.

Precious stones or gems are valuable on account of their rarity and brilliance.

The **Diamond**, a form of almost pure carbon, is the most brilliant gem. It is of sufficient hardness to cut glass with ease. India once largely yielded these stones, and Brazil in later times. The diamond-mines of Cape Colony, especially in the neighbourhood of Kimberley, are now the most productive. In 1895-99,



GOLD-MINING—THEN AND NOW.

the annual yield in Cape Colony averaged £4,500,000 ; and from 1867 to 1899, diamonds were found the value of which amounted to £92,000,000.

The **Ruby**, rich red in colour, is from 5 to 10 times more valuable than a diamond of equal size. The ruby-mines of Burma are the most famous, and fine gems are also found in Java, Siam, Ceylon, and Victoria.

The **Sapphire** and the **Emerald** are blue and green gems respectively, very closely allied to the ruby. Many other stones are highly esteemed, but all are of little commercial importance compared with the diamond.



DIAMOND MINE, KIMBERLEY.

## CHAPTER V.

### METHODS OF TRANSPORT.

#### Land Transport.

IN transporting commodities from one point to another, time is nearly always an important consideration ; and bearing in mind that time is money, the easier and quicker the transport, the cheaper the commodity.

In some uncivilized portions of the world, such as Equatorial Africa, roads are unknown, and beasts of burden cannot live. Failing a navigable river, the only method of transporting goods through the dense forests and jungles is by means of **porters**, each man carrying from 40 to 60 lbs., usually on the head. Stanley, in his great journey across Africa to the relief of Emin Pasha, was accompanied by nearly 400 carriers ; and in the last Ashanti war the troops marched through the jungle in single file, followed by native porters carrying the provisions, ammunition, and baggage. Of all methods of transport, this is the most tedious and expensive. Goods may be carried from Liverpool to the west coast of Africa at less cost than porters will carry them inland 100 miles.

In mountainous countries, where roads are steep or too badly constructed to allow the passage of vehicles, transport is provided by means of pack animals—chiefly the *horse*, *mule*, and *donkey*. The place of these, however, in traversing the narrow, ledge-like roads of the Himalaya passes, is taken by *sheep* and the *yak* or wild ox of Tibet. In South America the Andes are traversed by the *llama*, a sheep-like animal often called the American camel. The *ox* is largely used in Southern Europe, where the *ass* is also very common. In India and Southern Asia the *ox* is the chief pack animal. Waterless, hot, and sterile regions present almost insuperable difficulties to all animals except the *camel*—an animal that can subsist many days without water. The deserts of



Northern Africa are crossed by caravans consisting of sometimes as many as 500 camels, each carrying a burden varying in weight from 100 to 1,000 lbs. Arabia is the home of the camel, but it is also found in other parts of Asia and Africa, and in recent years has been found extremely useful in the arid regions of America and Australia.

**Roads and Traction.**—It must be borne in mind that animals cannot carry nearly so great a weight on their backs as they can draw in a vehicle. To allow the smooth progress of wheeled vehicles, good roads of even surface are absolutely necessary. In all civilized countries, especially those of Europe, the roads are

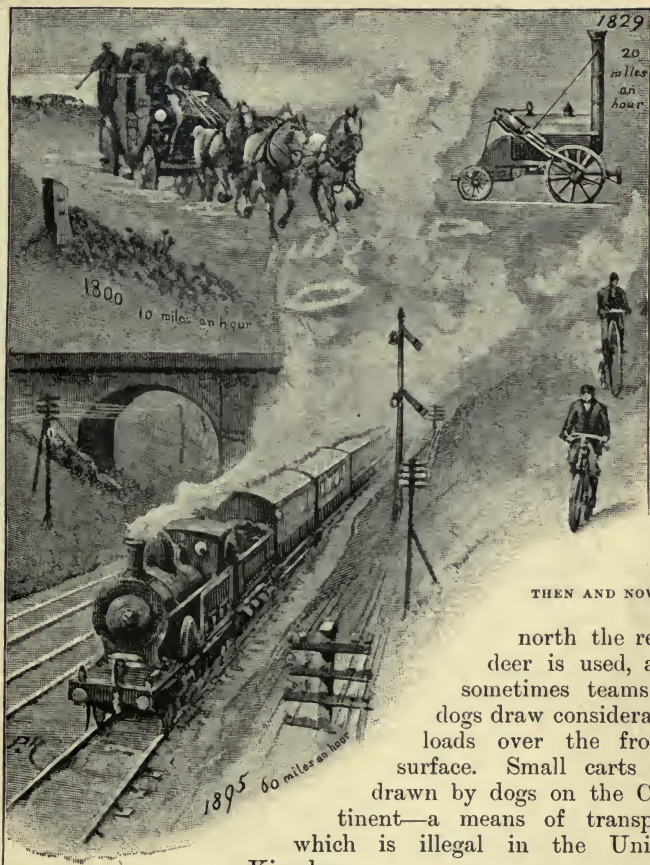


CARAVAN CROSSING THE DESERT.

carefully constructed, and even the Alps are crossed by excellent carriage roads, with fairly easy gradients. The wheeled vehicles of Europe are chiefly drawn by horses; in India, by oxen and sometimes elephants; and in South Africa, Australia, and some portions of America, heavy wagons are drawn over the rough, rock-strewn surface, and across shallow rivers, by teams containing as many as 40 oxen.

In the Far East, light two-wheeled vehicles are drawn by men, who thus carry both merchandise and passengers.

In all cold countries snow forms an excellent surface for sledges, which are generally drawn by horses. In the extreme



THEN AND NOW.

north the reindeer is used, and sometimes teams of dogs draw considerable loads over the frozen surface. Small carts are drawn by dogs on the Continent—a means of transport which is illegal in the United Kingdom.

**Railways.**—A railway is a road traversed by parallel metal rails, on which wheeled vehicles are drawn or propelled by the power of steam or electricity. The first railway, from Stockton to Darlington, was opened in 1825. Now (1900) there are 21,850 miles of railway in the United Kingdom alone, and in the world not less than 460,000 miles. Very few natural obstacles are allowed to bar the progress of railways: rivers are bridged, mountains and rivers are tunnelled, and precipices are skirted by the

iron road. Two of the most remarkable railways in the world are the *Canadian Pacific*, across the North American Continent from the Atlantic to the Pacific; and the *Great Siberian*, from Europe across Northern Asia. The St. Gothard Tunnel,  $9\frac{1}{4}$  miles long, and one of several that pierce the Alps, is a remarkable example of railway engineering. In our own country the Thames, Severn, and Mersey are tunnelled, and the estuaries of the Tay and Forth are bridged by magnificent structures. In our large cities are railways underground, or elevated on pillars above the roads, to relieve the streets of traffic. The average cost of British railways has been nearly £40,000 per mile, but in meeting exceptional difficulties very much more. The Underground Railway between Trinity Square and King William's Statue (London) cost over £1,000 per yard.

In some countries the railways are the property of the State, and railway rates and fares are low, the Government being satisfied if the income meets the expenses; on the other hand, when owned by companies, there is the danger that the necessity of earning dividends is the first consideration, to which national interests are not infrequently sacrificed.

It is not too much to say that railways have revolutionized the world. Vital energy has been imported into human affairs, the volume of trade has been multiplied, and in many ways they have contributed largely to the happiness and prosperity of mankind.

In the United Kingdom, the United States, and France the railways are very highly developed, as shown by the following fast runs:—

Country.	Company.	From	Miles.	Time	Miles per hour.
				H. M.	
United Kingdom	Caledonian	Forfar to Perth	32½	0 33	59'0
United Kingdom	Great Western	Paddington to Bath	106¾	1 58	54'2
United Kingdom	L. & N.W.	Penrith to Crewe	123½	2 17	53'9
United States	Philadelphia & Reading	Atlantic City to Camden	55½	0 50	66'6
United States	Lehigh Valley	Sagre to Geneva	76½	1 16	60'5
United States	New York Central	Syracuse to Rochester	80	1 24	57'1
France	Southern	Bayonne to Dax	31	0 30	62'0
France	Nord	Paris to St. Quentin	95¾	1 42	56'3
France	Nord	Paris to Arras	119½	2 10	55'0

In the train service of the United Kingdom more attention is paid to safety and punctuality than to the development of high speed services. Perhaps a reliable test of railway excellence lies



in the long runs without stopping, a few examples of the best of which are appended for comparison :—

Country.	Company.	From	Miles.	Time		Miles per hour.
				H.	M.	
United Kingdom	Great Western	Paddington to Exeter	194	3	43	52'2
United Kingdom	L. & N.W.	Euston to Liverpool	193½	3	45	51'6
United Kingdom	Great Northern	Nottingham to King's Cross	128	2	26	52'6
United Kingdom	L. & N.W.	Penrith to Crewe	123½	2	17	53'9
United States	New York Central	New York to Troy	148	3	0	49'3
United States	New York Central	New York to Albany	143	2	40	53'5
United States	Pennsylvanian	Harrisburg to Altoona	132	3	0	44'0
France	Nord	Paris to Calais	185½	3	30	53'0
France	Nord	Paris to Arras	119½	2	10	55'0
France	Nord	Calais to Amiens	104	1	57	53'3

**Pipes.**—Gas, water, oil, and sugar-cane juice are conveyed long distances through pipes, the two first named being common all over the civilized world. In America and the Caspian regions *petroleum* is conveyed from the oil-fields to the seaports in pipes, sometimes hundreds of miles in length; and the *juice* of the sugar-cane is similarly conveyed short distances from the crushing mills to the refineries. *Ice* from the Norwegian lakes travels down immense wooden slides, constructed on the mountain sides, to be shipped to London and elsewhere.

## Water Transport.

Water forms a natural highway, always in repair, for the distribution of the earth's varied products, whether it be by sea, river, or canal. Water carriage is cheap, and the ocean must be looked upon as uniting countries and continents rather than separating them.

**A Navigable River** flowing gently to the sea, the current of which for several hours a day is reversed for many miles by the incoming tide, is a valuable adjunct to the trade and commerce of a country, notable examples of which the United Kingdom possesses in the Thames, Mersey, Humber, and Clyde.

Even unnavigable rivers may be of considerable commercial value. In the great forested areas of the world trees are felled and floated down swirling streams to available points for collection, thus effecting a great saving in haulage. In industrial and commercial regions rivers naturally unsuited for trade are rendered useful by the deepening and widening of the channel. No better

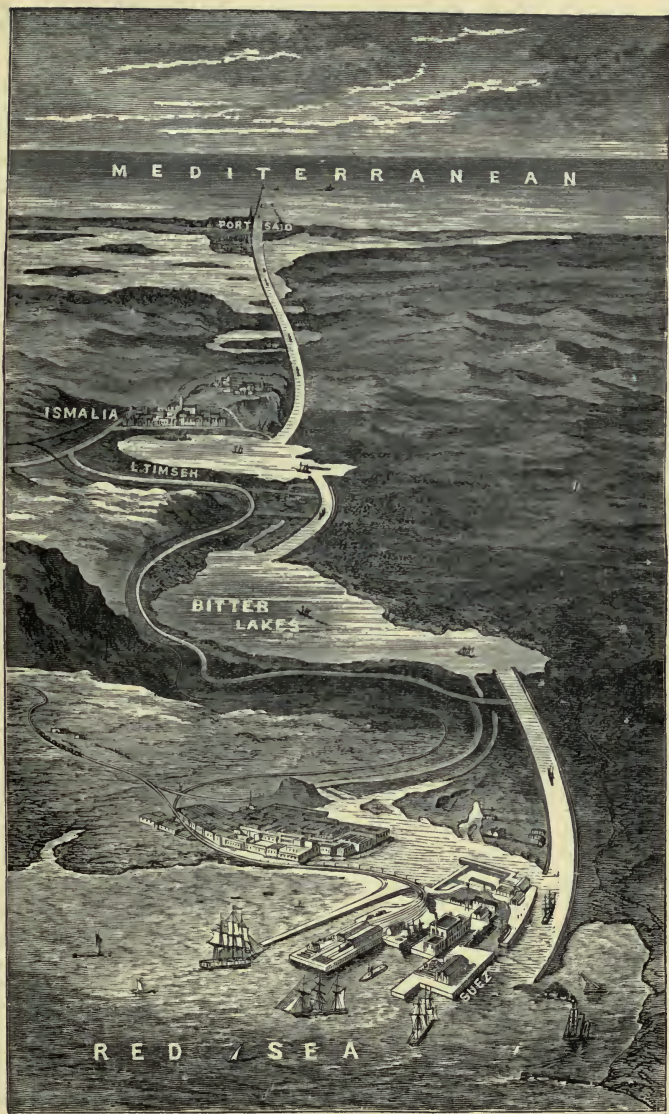


example of this can be afforded than by the Clyde, which has practically been reconstructed from Greenock to Glasgow—an outlay long since repaid in the improved trading facilities thus provided.

**Canals**, which were used even by the ancient Egyptians, are artificial channels that render excellent service in the absence of rivers, and also in uniting neighbouring river systems. A canal must be constructed in level lengths, and irregularities in the surface of the country are overcome by means of locks, where barges are raised or lowered to different levels. The utility of a canal may be gauged from the statement that a horse can draw in a barge forty times the weight that is possible in a wheeled vehicle. As in the case of railways, few natural obstacles balk canal engineers. Sapperton Tunnel, on the Thames and Severn Canal, is 3,805 yards long; and some tunnels are so low that the boatmen have to propel the boats by means of pushing with their feet against the roof. The utility of a canal is well shown by the *Welland Canal* in Canada. This channel joins Lakes Erie and Ontario, and by means of over twenty locks, vessels of considerable size are able to avoid the Niagara Falls in their passage to the sea. The *Suez Canal* is of international value, and is an argument in favour of a Central American ship canal, the construction of which will completely change some of the world's great trading routes.

**Sea-borne Traffic.**—A very great deal of the world's traffic can never be carried on by road, rail, river, or canal; the sea must be for ever the sole means of communication between vast areas of the surface of the earth. The great oceans are marked out by a bewildering network of trading routes, diverging from the great commercial centres like the spokes of a wheel, along which the trading vessels of the nations hurry to and fro. Sailing vessels are steadily giving way to steam, which is practically independent of wind and weather; steel is displacing wood; and the size of ships is being constantly increased. In 1899, out of nearly 1,200 vessels added to the world's shipping, about five-sixths were of iron or steel, and only one-fourth were sailing vessels. It is interesting to compare the *Great Western*, the first British steamship to regularly cross the Atlantic, and the *Celtic*, one of the latest products of modern construction:—

	Length.	Tonnage.	Speed.
Great Western.....	212 feet.	2,300	9 knots.
Celtic.....	700 „	20,880	20 „



THE SUEZ CANAL.

The former was propelled by paddles, whereas nowadays triple-expansion engines, where the steam is used three times over, and screw propellers, enable huge vessels to attain a velocity of over twenty miles an hour.

**Steam and Sail.**—Rapid steam passage is necessarily more expensive than passage by a sailing vessel, and speed in commerce is not always an all-important consideration. Much wheat reaches our shores by means of sailing vessels. The voyage may occupy three or four months, if, for example, the vessel sails from the west coast of America ; but the carriage is cheaper than by steam, and wheat is a marketable commodity all the year round.



THE "GREAT WESTERN," OF BRISTOL, A.D. 1838.

On the other hand, with a cargo of cattle from the Argentine to Liverpool, time is of the utmost importance: every day the cattle deteriorate in condition, and the mortality during passage is always considerable. In the same way, the mutton of New Zealand, the tea of India and Ceylon, and the fruits of the West Indies require rapid transit ; whereas with the rice of Burma, the timber of Australia or Canada, and the ores of Spain or South America, quick passage is not nearly so important.

**Cheap Transit a Necessity.**—It has been already stated that transport by water is cheaper than by land, but the discrepancy





THE WHITE STAR LINER "CEDRIC."

The largest vessel in the world: 21,000 tons; length, 700 feet; beam, 75 feet.  
Launched at Belfast, August 1902.

is sometimes almost incredible. In the United Kingdom, traders are handicapped by excessive railway rates. Sugar sent from Paris to Rouen, and thence to Liverpool by steamer, pays less freight than the same sugar sent by rail from Liverpool to Manchester, a distance of only forty miles. It is possible for certain classes of goods to be brought long distances by rail to New York, from whence they are shipped to Liverpool and railed to Wolverhampton, at less cost than an English merchant dealing in similar articles can transport by rail exactly the same class of goods from London to Wolverhampton. Shipping rates not infrequently present great anomalies. British goods destined for Australasia are often first consigned to Continental ports, less expense being incurred thereby than by forwarding *via* London. Glaring instances of this kind are easily found, and Midland industries are being removed to the coast to avoid these arbitrary imposts. Probably not until British railways become the property of the State will railway rates conform to the best interests of the national trade and commerce.



## CHAPTER VI.

### THE CHIEF COMMERCIAL NATIONS.

TAKING into account the value of their trade, the following are the chief commercial countries of the world (1899-1900):—

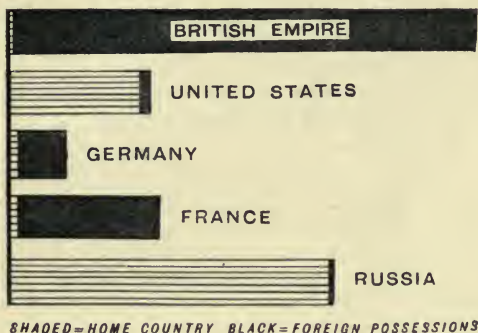
Country.	Trade—Imports and Exports. Million pounds.
1. United Kingdom.....	814
2. United States.....	760
3. Germany.....	432
4. France.....	302
5. Belgium.....	280
6. Holland.....	272
7. Italy.....	219
8. Russia.....	142

Belgium, Holland, and Italy present but few features of special interest, and further reference to them in this chapter will be omitted.

In respect to **size**, the several countries show marked disparity. But each possesses foreign territories—in the case of the United Kingdom very nearly a hundred times her own area; and altogether the combined areas of these five Powers amount to more than half the land surface of the earth.

Country.	Area, Home Country.	Area, Foreign Possessions.	Total Area. (Square Miles.)
United Kingdom.....	121,000	12,500,000	12,621,000
United States.....	3,582,000	172,000	3,754,000
Germany.....	211,000	1,025,000	1,236,000
France.....	204,000	3,740,000	3,944,000
Russia (Europe and Asia).....	8,660,000	94,000	8,754,000

The following diagram will strikingly illustrate what the figures mean :—



### The Defences of the Countries.

Country.	Army.	Navy.			
	Men.	Battle Ships.	Cruisers.	Torpedo Vessels.	Total.
United Kingdom .....	750,000	70	178	238	486
United States .....	193,000	16	56	50	122
Germany .....	3,000,000	25	57	130	212
France .....	2,500,000	35	89	305	429
Russia .....	3,500,000	24	49	233	306
Italy .....	3,250,000	19	28	180	227
Austria .....	1,800,000	...	...	...	...
Total .....	189	457	1,136	1,782	

The figures concerning the armies are approximate only, the conditions of service varying considerably in different countries. In Continental countries the huge armies are raised by conscription. The insular position of the United Kingdom renders it unnecessary to keep such a large standing army as those of her neighbours, whose frontiers are more easily open to attack.

The sea frontier of the British Empire is estimated at about 35,000 miles; and to guard this, together with the interests of our mercantile marine all over the world, it is imperative that our naval defence should assume almost unassailable proportions.

British naval expenditure may be thus looked upon as a form of insurance against interference with our over-sea commerce, to guarantee the import of food-stuffs on which half the population of the United Kingdom depends, and the continuous arrival of those raw products in which at least five million of our work-people are directly concerned.

The table appended shows what is the naval expenditure of various countries per ton of merchant shipping :—

Country.	Naval Expenditure per ton of Merchant Shipping.		
	£	s.	d.
British Empire.....	2	7	0
United Kingdom.....	2	13	0
Germany.....	3	18	0
United States.....	8	4	0
Russia.....	10	7	0
France.....	11	10	0
Japan.....	34	4	0

The figures for Japan are included to show the exorbitant price she pays in her anxiety to rank as a great naval power.

### Populations of the Great Powers (1900).

The population of the world is estimated to be about thirteen hundred millions, more than half of whom live in the territories of the Powers tabulated below :—

Country.	Population of Home Country.	Population of Foreign Possessions.	Total (in Mill- ions).	Percentage of the World's Population.
1. United Kingdom....	41	347	388	25·9
2. Russia.....	130	3	133	8·9
3. France.....	39	56	95	6·3
4. United States.....	75	10	85	5·7
5. Germany.....	55	15	70	4·6

India and China have each a population of about three hundred millions; the former is included in the above, but not China.

### The Battle of the Tongues.

The history of the nineteenth century contained nothing more noteworthy than the phenomenal extension of the use of the English tongue, and the remarkable manner in which it out-stripped its Continental rivals.

French was the leading speech of the world when the century dawned, with Russian and German following very closely ; Spanish was fourth in the race. English was on the lips of less than twenty-one millions of people, and of these quite three-fourths consisted of inhabitants of the British Isles. There were but five millions of English-speaking people in all the rest of the world, and most of these were in the United States, the British colonies accounting for less than three-quarters of a million.

The whirligig of time has wrought a marked change, and it is a fact now that "only speak English loud enough, and it will be understood over all the world." A hundred and twenty millions of people are to-day speaking English, of whom no less than eighty millions are outside the United Kingdom. Cousin Jonathan has increased from five millions to sixty, and the colonies now contain twenty millions speaking English, as compared with



seven hundred and thirty thousand in the year 1800. The German, Russian, and French languages also show remarkable growth, but it is almost solely the outcome of the natural increase in their home populations. Spanish, although it has fallen to the fifth position, is the only language that can throw down the gauntlet to English in respect of growth outside its own borders. This is chiefly accounted for by the increase in population in South America, where Spain so long held sway. More than half the Spanish-speaking people are outside Spain.

Even in this respect the potentialities of growth rest with English ; for whereas the growth of Spanish is confined to South America, English is spread over the whole habitable globe, and is already the master tongue in vast territories that will form the future homes of untold millions. That the present century will



show yet more remarkable increase of English is but compatible with the growing dignity of the British Empire, "whose morning drum-beat, following the sun or keeping company with the hours, encircles the globe with one continuous strain of the martial airs of England."

### Shipping.

In the possession of a magnificent merchant navy Britain stands unrivalled. The merchant navies of the world are estimated to be worth 246 millions sterling, and that of the British alone to be worth 108 millions.

Omitting all craft of less than 100 tons, the following is a comparison of the chief mercantile navies, extracted from Lloyd's Register, 1900 :—

Ccountry.	No. of Vessels.	Sail— net Tons.	Steam— gross Tons.	Total Tonnage—Sail (net), Steam (gross).
United Kingdom...	8,914	1,727,687	11,513,759	13,241,446
British Colonies ....	1,924	384,477	635,331	1,019,808
British Total...	10,838	2,112,164	12,149,090	14,261,254
United States .....	3,135	1,295,305	1,454,966	2,750,271
Germany .....	1,710	490,114	2,159,919	2,650,033
Norway .....	2,380	876,129	764,683	1,640,812
France .....	1,214	298,369	1,052,193	1,350,562
Other Countries....	9,145	1,602,289	4,788,507	6,390,796
Gross Totals...	28,422	6,674,370	22,369,358	29,043,728

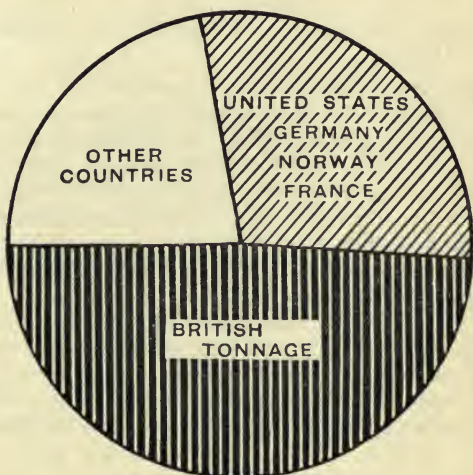
**Britain is the World's Carrier** ; for not only is 67 per cent. of her own enormous commerce carried in British vessels, but a very great share of the trade of other countries also—of the United States, 57 per cent. ; Russia, 51 per cent. ; Belgium, 49 per cent. ; Holland, 48 per cent. ; France, 47 per cent. ; and Germany, 32 per cent.

These figures may well be a source of British gratification ; but the commercial history of recent years shows the determination of Germany and the United States to increase their maritime strength. The United States is rapidly adding to her mercantile marine, and to meet her deficiency has even purchased controlling interests in old-established British steamship companies. Though she possessed a tonnage greater than Germany, there was not nearly so much need to fear competition in this quarter. Nearly one-half of the

American built tonnage consists of sailing vessels, and steam tonnage is the only foundation on which competition may be securely based.  
(See page 142.)

The competition of Germany in the Atlantic passenger trade, too, is already severe, and her flag is rapidly advancing in all the chief commercial waters of the globe.

For a long period our Atlantic liners were superior to any other mercantile vessels afloat, but brief particulars of eight of the largest modern steamers show that Germany possesses half the number, with a marked preponderance of tonnage, in addition to which they are superior in speed.



	Length.	Tonnage.	Owners.
1. <i>Celtic</i> .....	700	20,880	White Star (Brit.).
2. <i>Kaiser Wilhelm II.</i> .....	706	19,500	Nord-Deutscher Lloyd (Ger.).
3. <i>Oceanic</i> .....	685	17,274	White Star.
4. <i>Deutschland</i> .....	662	15,500	Hamburg-American.
5. <i>Kronprinz Wilhelm</i> .....	633	15,000	N.-D. Lloyd.
6. <i>Kaiser Wilhelm der Grosse</i> ..	627	14,349	N.-D. Lloyd.
7. <i>Campania</i> .....	600	12,950	Cunard (Brit.).
8. <i>Lucania</i> .....	600	12,950	Cunard.

For purposes of comparison, it may be noted that the celebrated *Great Eastern* had a length of 692 feet, and a tonnage of 18,915.

There is every indication that the present century will witness a stern shipping struggle between the British and the Germans, the result of which it is difficult to forecast; but the energy and determination that have built up our maritime supremacy in the

past, with due care and intelligent anticipation will still keep the British flag in front of all competitors.

### The Race for Markets.

Half a century ago, in the commerce of the world, the United Kingdom was absolutely supreme. At the beginning of the new century the exact position of affairs is admirably stated in the following quotation from an American consular report:—

“Of the 18,000,000,000 dollars’ worth of commerce done by all nations, England’s share is 18·3 per cent., Germany’s 10·8 per cent., and 9·7 per cent. falls to the United States. Germany has built up her foreign commerce at England’s expense, and the United States, which is just entering the field, is building up a great foreign trade at the expense of both.”

The United States and Germany are not the only countries who compete with us, but their methods are more vigorous and their success more marked than those of other countries. Russia, with its undeveloped natural wealth and resources, and Japan, a young competitor in the race, should not be held too cheaply. American competition was but a threat a few years ago, the fulfilment of which British manufacturers are now realizing only too keenly.

Industrial progress is perhaps most reliably measured by the volume of export trade, although this is not always applicable to populous self-contained countries. Discarding 1899, which was marked by a boom in trade and prices, and 1900, when our large mercantile vessels were largely occupied as transports to South Africa, the following will denote the progress of the three great competing nations for a period of five years, in the last of which the United Kingdom was beaten for the first time.

#### EXPORTS OF HOME PRODUCTS ONLY—1894–98 (in million pounds).

Country.	1894.	1895.	1896.	1897.	1898.
United Kingdom...	216	226	240	234	233
United States .....	181	165	179	215	252
Germany .....	148	165	176	181	187

Various aspects of competition, and its effect upon British trade, will be found in greater detail in later pages dealing with the industries and commerce of the United Kingdom.

The inhabitants of the United States are of the Anglo-Saxon race, and their natural energy and enterprise, together with the unrivalled natural and economic advantages of their vast country, will render them increasingly vigorous competitors in the markets of the world.

Whether England will withstand the determined onslaughts on her trade, depends largely upon the co-operation and amicable understanding between her capital and labour; arbitration should replace strikes as a method of settling differences between them; the workers should welcome labour-saving machinery, and should not measure output by the number of hours employed; the consumption of strong drink should be lessened; and increased national attention should be given to technical and commercial education.

In 1900 there were over 600 strikes and lockouts in the United Kingdom; some 188,000 workpeople were involved, and over three million working days were lost, which entailed the forfeiture of quite three-quarters of a million sterling in wages.

The national drink bill in the same year amounted to over £160,000,000, as follows:—

	Expenditure.	Per head.
	£	£ s. d.
England .....	133,521,443	4 3 2
Scotland .....	14,305,861	3 6 4
Ireland .....	13,004,414	2 18 0
United Kingdom.....	£160,891,718	£3 18 8

If this enormous expenditure could only be reduced by one-fourth, it would provide means to solve many problems of the day, such as sanitation, housing of the poor, and the provision of old-age pensions. In the United Kingdom the average consumption of drink per head per annum is 33 gallons; in the United States it is less than 15 gallons.

In geographical location, for controlling the world's markets, England has the advantage; raw materials are easily brought to her shores, and labour is generally cheaper than in America. British supremacy has been considerably shaken, but pride of place in the commerce of the world will not be allowed to pass to any of her competitors without desperate efforts to retain it.

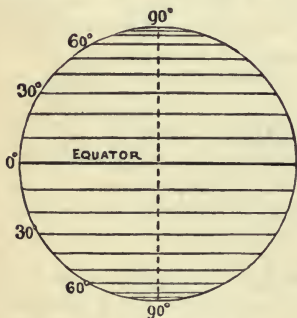


## CHAPTER VII.

### LATITUDE, LONGITUDE, AND DIFFERENCE IN TIME.

IF we desire to find a place on the map, we require to know its latitude and longitude. By the same means the mariner can pick his way across the trackless ocean from one point to another, providing he knows the latitude and longitude of the present position of his ship, and also the latitude and longitude of the place to which he wishes to steer his course.

**Latitude** is the distance north or south of the Equator, which is an imaginary line drawn round the middle of the Earth.



PARALLELS OF LATITUDE.

The distance between the Equator and either of the Poles is a quarter of a circle, or 90 degrees (a circle = 360 degrees), and the North Pole is consequently 90° north latitude, and the South Pole 90° south latitude.\*

Lines drawn round the Earth parallel to the Equator are called lines or parallels of latitude; and marking each degree, there would be 89 such lines between the Equator and either of the Poles.

No place can exceed 90° N. or 90° S. latitude.

The Equator is called a great circle; all the parallels are smaller circles.

A degree is subdivided into minutes and seconds—60 seconds = 1 minute; 60 minutes = 1 degree. There is no time value attached to these divisions.

London is situated midway between the fifty-first and fifty-second north parallels, and is said to be 51° 31', or 51½°, N.

\* A degree = 69½ miles (approx.), or 60 geographical miles.

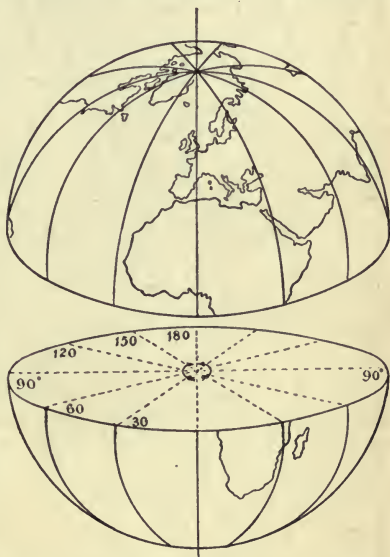
latitude; and since a degree =  $69\frac{1}{2}$  miles, it is readily ascertained that London is  $51\frac{1}{2} \times 69\frac{1}{2} = 3,579$  miles north of the Equator.

**Longitude.**—Lines drawn from north to south through the Poles are called *meridians*, and longitude is the distance east or west of a given meridian.

The lines of longitude are so called because all places on the same line have their mid-day, or meridian, at exactly the same time. Meridians are all great circles; they are not parallel, but converge to the Poles.

Latitude is always measured from the Equator; longitude is measured by different nations from different places. Most nations use the meridian of Greenwich, but France uses that of Paris.

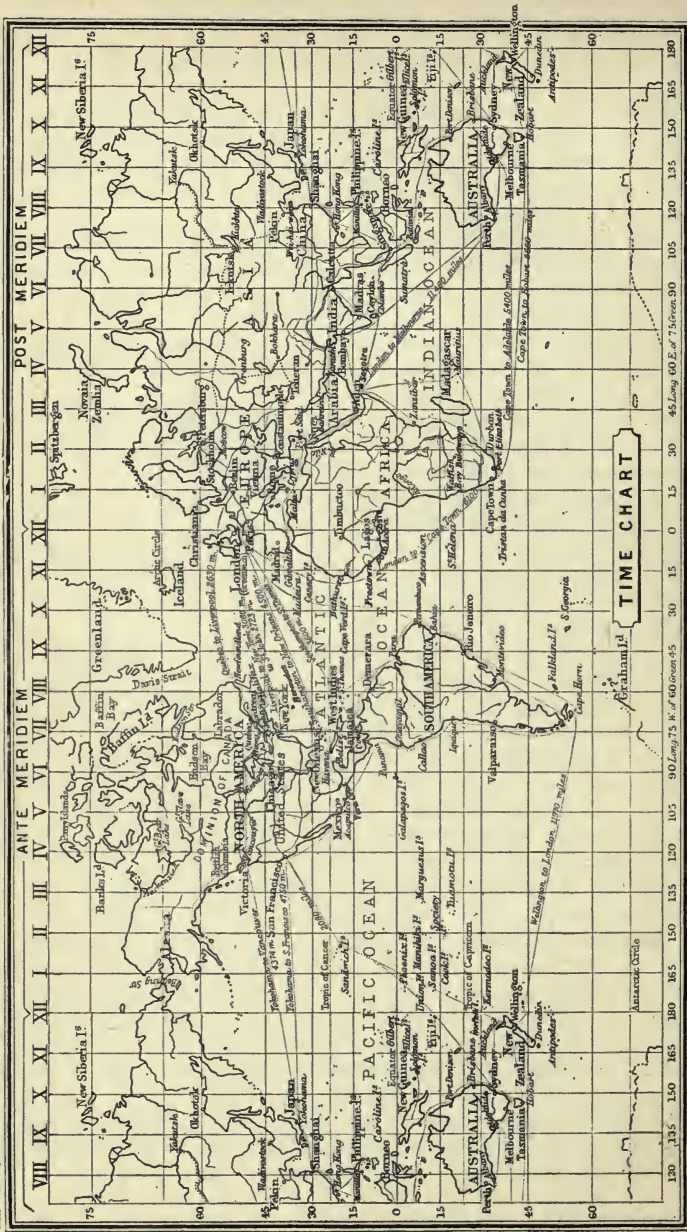
A great circle drawn through Greenwich, the Equator, and the two Poles is the starting-point, and is marked  $0^\circ 0'$ . All places are either on this meridian, or east or west of it. Constantinople is east longitude; Cork is west longitude. No place can be more than  $180^\circ$  east or west longitude, but it is possible for a place to be both if it be situated exactly on the meridian of  $180^\circ$ : the island of Vanu Levu (Fiji Islands) is in this position.



**Position of a Place.**—By means of the parallels and meridians it is an easy matter to fix the position of a place if we know its latitude and longitude. The point where the parallel of latitude crosses the meridian of longitude will exactly mark the position of the place. If we desire to know what place is  $37^\circ 48'$  S. lat. and  $144^\circ 57'$  E. long., by noting where the parallel cuts the meridian we ascertain the place to be Melbourne.

Degrees of latitude are measured along the meridians; degrees of longitude are measured along the parallels. All degrees of latitude are of the same length, whether north or south of the

The World rotates from West to East →



Each Meridian drawn on the Map represents 15° of Longitude or one hour in Time

Equator; but as the meridians converge toward the Poles, degrees of longitude decrease in length.

At the Equator a degree of longitude =  $69\frac{1}{2}$  miles.  
 At the 51st parallel „ „ = 38 miles.  
 At the 89th parallel „ „ = about 1 mile.

**Difference in Time.**—The Earth revolves on its own axis once in every twenty-four hours; which causes day and night: one half of the globe is in darkness while the other is in light. It is  $360^\circ$  round the middle of the Earth; consequently in its daily journey the Earth travels at the rate of  $15^\circ$  per hour. **Sunrise** thus travels round the Earth  $15^\circ$ , or about 1,000 miles, an hour. A place  $15^\circ$  west of Greenwich will have its sunrise an hour later, and a place  $30^\circ$  west two hours later, whereas a place  $15^\circ$  east will have its sunrise an hour earlier than Greenwich.

If we know the time at a given place and compare it with Greenwich time, it is easy to ascertain on what meridian the place is situated; for example, when it is noon at Greenwich, it is 5 p.m. at Cashmere. Cashmere time is five hours earlier, therefore  $5 \times 15 = 75^\circ$  east longitude.

Knowing the longitude, we can ascertain the time at a given place. Philadelphia is  $75^\circ$  west longitude, therefore the time will be  $75 \div 15 = 5$  hours later than Greenwich time. Thus, at exactly the same moment it is 7 a.m. in Philadelphia, noon in London, and 5 p.m. in Cashmere.

It is of importance to remember difference in time in communicating by telegraph with distant parts of the world, especially where a prompt reply is necessary. It must be borne in mind that at nine o'clock in the morning, when our commercial houses commence the business of the day, it is but four o'clock in New York.

When it is twelve o'clock (noon) in Greenwich, the local time is as follows at—

	Hrs.	Min.
Amsterdam.....	12	20 p.m.
Auckland (New Zealand).....	11	39 p.m.
Berlin.....	1	53 p.m.
Bombay.....	4	51 p.m.
Calcutta.....	5	53 p.m.
Capetown.....	1	14 p.m.
Lisbon.....	11	24 a.m.
Naples.....	12	57 p.m.
Paris.....	12	9 p.m.
Pekin.....	7	46 p.m.
Quebec.....	7	15 a.m.
San Francisco.....	4	23 a.m.
Sydney.....	10	5 p.m.
Vienna.....	1	6 p.m.



## PART II.

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### CHAPTER VIII.

#### THE UNITED KINGDOM.

THE **British Isles** lie off the western coast of Europe. The chief are Great Britain and Ireland, together with several thousands of isles and islets of varying size and importance.

#### Position.

Their position for commercial purposes is a convenient and commanding one. They are situated almost in the centre of the great land masses of the globe ; they lie in the direct route from the busiest and most civilized peoples of the Old World, and the busiest and most progressive countries of the New ; from their shores radiate easy trading routes to all parts of the world ; no part of the country is more than 120 miles from the sea ; the coasts abound in excellent harbours, open to shipping all the year round ; and their insular position prevents the probability of sudden attack by any possible foreign foe. All these advantages have aided the British to commercially conquer the whole world.

#### Coasts.

The total length of coast-line of Great Britain and Ireland is over 6,500 miles, or one mile of shore to every twenty square miles. England has 2,000 miles, Scotland 2,500, and Ireland 2,000 miles.



THE BRITISH ISLES AND THE NORTH SEA.

*(The depths are given in fathoms.)*

The east coast of Great Britain is separated from Europe by the North Sea or German Ocean. The waters of this sea are only from 70 to 300 feet deep, and navigation is in places much impeded by banks and shallows, cross-currents and fogs; its average width is about 300 miles, narrowing towards the south, until, at the Strait of Dover, it is but 21 miles wide. There are many natural harbours along the coast, but a large number of them are shallow, and impeded by sandbanks, and can only be entered by ships, especially during storms, under the guidance of a skilled pilot.

The south coast of England is washed by the English Channel, the busiest shipping thoroughfare in the world. Southampton

Water, Plymouth Sound, and Falmouth Harbour are almost ideal shipping havens.

The west coast of Scotland is marked by numerous deep indentations, which, with the exception of the Firth of Clyde, are of little commercial importance. The harbours of the west coast of England are usually impeded by sandbars, and the mouth of the Mersey is kept available for the passage of large ships only by constant dredging.

The coast of Wales possesses many good harbours, of which Milford Haven is the finest; and the Bristol Channel, lying between South Wales and Devon and Somerset, is of great importance.

The east coast of Ireland is obstructed by shallows and sandbanks, but there are many good harbours available for shipping all round the coast.

The coasts of the United Kingdom present innumerable difficulties to the mariner, and few harbours can be entered except for several hours daily at high tide; but no country possesses so many useful aids (harbour works, docks, breakwaters, etc.) to facilitate progress.

From six hundred points round the coast lighthouses cast their warning gleams; and in other places buoys and lightships mark where danger threatens. Notwithstanding these precautions, a large number of vessels are wrecked on our shores and many lives sacrificed every year. But for the efforts of a magnificent lifeboat service, with its 300 lifeboats and 18,000 men, the annual death-toll would be a far heavier one.

## Surface.

Though the **mountains** of the United Kingdom are insignificant compared with those of the Continent, the surface of the country is by no means flat. The Pennine Chain, stretching from the Cheviot Hills to Derbyshire, forms the central portion of the main watershed of England. The Cumbrian System occupies the counties of Cumberland and Westmoreland; the greater portion of Wales is occupied by the Cambrian System; and the Devonian System runs throughout Devon and Cornwall. Elsewhere England may be best described as alternations of hill, dale, and fertile plain.

Scotland contains far more elevations. The chief mountains are those of the Northern Highlands, the Grampians, and the



MAP OF BRITISH ISLES.



Southern Highlands. In Ireland the mountains generally lie around the coast.

The **rivers** are for the most part small; only the Thames, Severn, and Shannon exceed 200 miles in length. The Thames is but 210 miles long, the Clyde 98 miles, and the Mersey 70 miles, but their estuaries are lined with splendid docks, which provide ample facilities for shipping; and in a lesser degree the mouths of many other rivers form excellent harbours.

### Climate.

From a commercial point of view, the natural forces and climate of the United Kingdom leave little to be desired. Lying in the north temperate zone, the surrounding seas and the proximity of the Gulf Stream provide a more equable climate than that of any other country in corresponding latitudes: there is abundant moisture, and freedom from extremes of heat and cold. The average temperature is 50°, and labour is generally possible the whole year round.

The prevailing westerly winds from the Atlantic Ocean deposit their moisture on the western shores, causing the neighbouring counties to be most suitable for pasture; the eastern counties, being drier, are more suitable for the cultivation of wheat and other crops. Scotland is on the whole colder than England, though the Hebrides and Orkneys enjoy as mild winters as London. The climate of Ireland is more moist, and its evergreen pastures gain for it the title "Emerald Isle."

Ignoring the rainiest districts of the north-west coast, the annual rainfall of England is about 25 inches, Scotland several inches more, and Ireland about 36 inches. In certain portions of Cumberland and Argyleshire it is 180 and 120 inches respectively.

### Agriculture.

The total area of the United Kingdom is about 77½ million acres. Over 37 million acres are under crops and grass, 23 million acres are grazing lands, 3 million acres are wooded, and less than twenty per cent. of the whole area (including mountains, water, and land) is uncultivated.

In Scotland, more than three-fourths of the surface is unsuitable for cultivation, but the available land is particularly fertile along the eastern coast-lands from Caithness to Berwick, the river

valleys, and the plains bordering the firths. One-fourth of Ireland is occupied by peat-bogs, but in England quite three-fourths of the whole is available for agricultural purposes.

The following shows the distribution of the cultivable lands :—

	1874. Acres.	1894. Acres.	1901. Acres.
Corn crops.....	11,332,998	9,339,015	8,451,298
Green crops.....	4,934,638	4,464,046	4,208,627
Flax .....	116,280	102,611	56,143
Hops.....	65,805	59,535	51,127
Small fruit.....	69,000	68,415	74,999
Bare fallow.....	672,393	395,340	355,072
Clover and grasses.....	6,309,480	5,815,830	6,090,086
Permanent pasture.....	13,588,150	27,546,988	28,349,949

A distinguishing feature of British agriculture is the decreasing acreage under crops, and a corresponding increase in permanent pasture. Of the cereal crops, about five-eighths are in Great Britain.

The Scottish barley crop exceeds that of Ireland, but in oats Ireland takes the lead. The cultivation of flax in Ireland (Ulster), and of the hop in England, are noticeable features of special localization; flax shows a constant downward tendency.

**Wheat** requires sunshine and little moisture. Except on the western borders, these conditions obtain generally: in England, especially in the eastern counties; in Scotland, chiefly along the east coast. In Ireland the climate is too moist for successful wheat cultivation. The average yield of wheat for the United Kingdom is about twenty-six bushels per acre, but on the farms of Essex, Lincolnshire, and neighbouring counties the yield is frequently forty bushels. The vast quantities of cheap foreign wheat now available have caused a decrease in the home cultivation of this cereal. In 1865, in Great Britain, there were under cultivation 3,981,989 acres of wheat, but in 1901 only 1,700,820 acres, producing 54 million bushels of grain.

**Barley**, requiring less sun than wheat, is consequently more general, occupying more than one-quarter of the cereal area of Great Britain; about one-tenth of Ireland is sown with barley. The acreage under barley was 2,164,449, and the total yield 67 million bushels.

**Oats**, extending to the far north, form the chief cereal crop. Over 4 million acres produced 160,000,000 bushels in 1901.

**Rye** is usually gathered early, for use as green fodder.

The **potato** is general over all the kingdom, but the crop is particularly heavy in Ireland, where it forms the staple food. **Turnips** and **swedes** are largely grown, owing to their value as a winter cattle-food.

**Flax**, with the exception of Yorkshire and one or two Scottish counties, is confined almost entirely to the north of Ireland. **Hops** are grown chiefly in Kent, Sussex, Hereford, and Worcestershire.

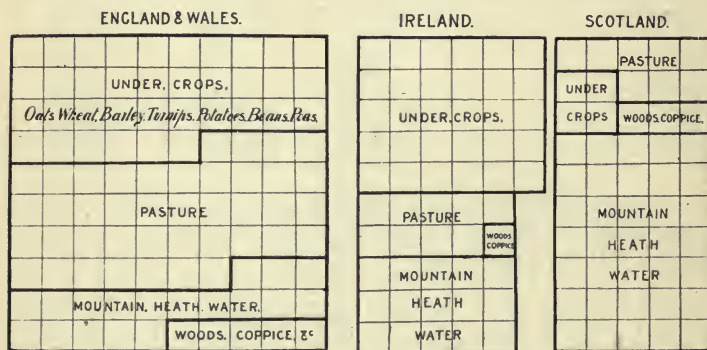


DIAGRAM SHOWING THE AGRICULTURAL CHARACTER OF THE SURFACE OF THE UNITED KINGDOM.

**Market gardening** is a profitable occupation in the neighbourhood of large towns, and **fruit** cultivation is receiving increased attention. The Channel and Scilly Isles extensively cultivate **early vegetables** and **flowers**, for which there is a constant demand. On one day alone, in March 1901, over thirty tons of flowers left Penzance for Covent Garden market (London).

### Live Stock (1901).

Cattle.....	11,435,929
Sheep.....	30,755,845
Pigs.....	3,398,971
Horses.....	2,002,811

These vast numbers of animals are by no means sufficient for our wants. Every year many thousands of live cattle and sheep are brought to our shores from abroad, in addition to immense quantities of meat.

The distribution of the pasture lands governs the distribution of the domestic animals.

**Sheep** thrive best in the drier regions of the east, and in the rainier west are found on the easily-drained hillsides rather than the plains. The chalk and limestone areas of the east and south, and the southern uplands of Scotland, are specially suitable for sheep-rearing. The sheep of the west are mainly reared for food; in the east a great consideration is the quality of the wool. The humid atmosphere of Ireland is not favourable to sheep. The mutton of the Welsh mountain sheep is very highly esteemed, and the Cheviot sheep come within the same category. Other important varieties are the long-wooled Cotswolds, Lincolns, and Leicesters; the South Downs are noted for their fine short wool.

**Cattle.**—The rich pastures of Ireland and the west of England are particularly favourable to cattle-rearing. In Ireland there are twenty-two cattle per hundred acres, in England and Wales fifteen, and in Scotland only six. The chief breed of cattle, the shorthorn, is noted for both beef and milk, and is widely distributed all over the British Isles.

**Pigs.**—One-third of the pigs in the United Kingdom are found in Ireland, where there are few counties that do not rear six pigs per hundred acres, which is more than in England and Wales. The English counties Suffolk, Cambridge, Bedford, Huntingdon, Berkshire, Hampshire, and Wiltshire are noted pig-breeding centres.

**Horses** are largely reared in Yorkshire, Norfolk, Hants, and Cambridgeshire, where there is a horse for every twenty acres. In Ireland, the eastern counties are most favourable, and the proportion about the same; in Scotland, Fife and Linlithgow are the chief centres, with a proportion considerably less.

The finer breeds of British animals are greatly in demand in the colonies and various foreign countries, where they are introduced for crossing and improving their own stock.

British agriculture is not nearly so flourishing as is desirable. Our farmers have not applied scientific knowledge to their occupation to the same extent as their competitors abroad. British soils require plentiful manuring, which the virgin soils of foreign agricultural areas need in a much lesser degree; and heavy rents and the exorbitant cost of railway freightage militate against the British farmer, even in markets to which he is in close proximity. In recent years, the low rate of wages paid to agricultural labourers has caused large numbers to leave the soil, to seek employment in the great cities and industrial centres.



## Fisheries.

**Fishing** is general all round the coasts, but certain localities are the centres of a vast industry. Grimsby, Hull, Yarmouth, and Lowestoft are the chief fishing ports on the east coast of England, possessing fleets of fishing-smacks and steam-trawlers, which fish all over the North Sea, particularly the neighbourhood of the Dogger Bank, for cod, turbot, plaice, and herring. The catches are collected by special fast steamers, which convey the fish direct to London, or to the adjacent ports, from whence express fish-trains carry it to the dense populations of the manufacturing centres. Off the south coast of England (Plymouth) and Ireland (Kinsale) mackerel are very plentiful, and the pilchard abounds off Cornwall (St. Ives).

The herring-fishery commences at Stornoway in April, moving round the east coast, and ending at Yarmouth in November. The chief Scottish ports engaged are Wick, Fraserburgh, Peterhead, and Aberdeen.

The Firth of Clyde inlets, especially Loch Fyne, are noted for herrings. The Irish Sea is fished by boats from Lancashire ports, from Dublin, and the Isle of Man.

Quite three-fourths of the total annual catch is landed at east coast ports. It is estimated that quite 109,000 men and over 26,000 boats are engaged in the British fisheries. In 1901 there were about three-quarters of a million tons of fish landed at British ports, valued at  $9\frac{1}{2}$  millions sterling (salmon not included).

The advent of steam in fishing operations has done much to denude the old fishing-grounds of saleable fish. The fisheries of the North Sea are not nearly so productive as in former years. Vessels now have to go much farther to obtain a profitable catch, and much of our fish comes from the neighbourhood of the Faroe Islands, or even as far as Iceland. Many of the vessels conveying the catch to the ports have tanks in which the fish may be kept alive until landed. In the spring of 1901, a Grimsby trawler established a record income from one trip, during a voyage from Iceland. Eighty hours' fishing produced 600 boxes of plaice, 200 boxes of haddocks, and a quantity of halibut,—valued at nearly £800.

With one exception, the river fisheries are unimportant. The Tweed, Tay, and Spey in Scotland, the Severn in England, the Shannon in Ireland, and the seas in their immediate neighbourhood, are the chief centres of the salmon-fishery.

Oysters are chiefly cultivated in the vicinity of the Thames, and around the eastern coast; Whitstable and Colchester are specially noted.

### Mining.

The abundance and the quality of its useful minerals have largely assisted in making England the richest country in the world. The chief minerals are coal, iron, lead, tin, copper, slate, limestone, and salt.

*Mining* is the occupation of about 815,000 people, and the total value of the year's output (1900) not less than £135,957,000. In 1900 the output of British mines was 280 million tons, of which quite three-fourths was coal; in 1850 the yield was five times less.

**Coal.**—The chief coal areas of the United Kingdom lie between a line drawn from the mouth of the Clyde to the Forth, and another in the south from the mouth of the Severn to the Wash. Coal has been discovered in Kent, and Ireland possesses a few beds of poor quality in scattered districts.

The principal coal-fields are—

1. The *Northumberland and Durham*.—The iron-works and shipbuilding yards of Sunderland, Newcastle, Hartlepool, and Middlesborough draw their supplies from hence; in addition to which vast quantities are shipped at the Tyne, Wear, and Tees ports to London and all parts of the world.

2. The *Yorkshire* (with which are Derby and Nottingham).—After supplying the towns engaged in the woollen and iron industries, there is a considerable surplus consigned by rail to London.

3. The *Lancashire*.—Fuel is provided for the vast cotton industry, and most of the yield is used up immediately round the sources of supply. At Liverpool large quantities of coal are shipped by vessels for use on foreign voyages.

4. The *Staffordshire*.—Though not nearly so large as any of the foregoing, the yield is sufficient for the needs of the Potteries and the Black Country. Being the nearest coal-field to London, large supplies are dispatched there by rail and canal.

5. The *South Wales*.—The chief feature of the yield is the anthracite, or smokeless variety. It is largely in demand for brewing, and also for coaling naval vessels. Much of the supply is exported from Cardiff and Swansea, and other Bristol Channel ports, to foreign countries. In 1900 the coal export from these ports amounted to over 18,000,000 tons.



THE COAL DISTRICTS OF ENGLAND.

6. The *Scottish*.—These extend in a belt of varying width from Ayr to Fife. A great deal is used in the local industries, but much is also exported from the eastern ports (Leith, Grangemouth, Dundee) to the Continent—in 1900 over  $5\frac{1}{2}$  million tons.

Other smaller coal-fields are situated in Cumberland, North Wales, Shropshire, Worcestershire, Forest of Dean, and Bristol.

The coal-fields of the United Kingdom have been exploited almost to their fullest extent; the capital engaged in the industry amounts to many millions of pounds; and it is not too much to say that our success as a manufacturing nation rests chiefly upon a solid foundation of coal.

As far back as 1860, public attention was called to the possible



exhaustion of our coal supplies. A Royal Commission investigated the matter, and as a result of close inquiry, Professor Jevons arrived at the conclusion that the native supplies would not last much more than a hundred years if the production maintained its average rapid progressive increase. In later years further statistics

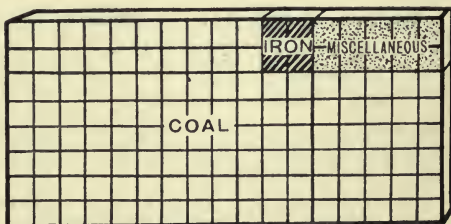


SCOTTISH COAL-FIELDS.

modified these calculations, and the period of probable exhaustion was doubled, and, under certain likely conditions, even quadrupled. However experts may disagree upon the length of life of our coal-fields, it is evident that the end must eventually come, even though we exploit fresh fields and delve deeper than hitherto.

In 1660, our annual coal yield did not exceed 2,000,000 tons, which was doubled a century later; in 1800, the total output was 10,000,000 tons; in 1854, it was increased more than six times; and in 1871, the total had risen to 118,000,000 tons. These figures illustrate the enormous and ever-increasing drain on our sources of supply. The increase, however, has not ended here; for in 1900 no less than 225,000,000 tons were torn from the vitals of the United Kingdom.

**Iron.**—British iron ores frequently lie in close proximity to coal—a fact that has been an important factor in the development of the iron trade. The red hematite ore of Cumberland and North





Lancashire is the finest procurable, being an oxide that produces the pure metal with comparative ease. In South Wales, Forest of Dean, and Northamptonshire brown hematite occurs, but it is less rich in iron. The common clayband and blackband varieties are found in most of the coal-fields.

In 1900, over 14,000,000 tons of iron ore were raised. From this, 4,666,000 tons of metal were produced, valued at nearly £20,000,000. In addition to this, 6,000,000 tons of foreign ore were imported, five-sixths of which came from Spain.

**Tin** is obtained almost entirely from Cornwall and Devon. In 1900, 4,000 tons were produced, to the value of over £500,000.

**Copper** is mined in the same counties, but only 765 tons, value £60,000, were obtained from native ores in 1900. The copper-smelting industries of Swansea and Widnes are chiefly supplied from abroad.

**Lead** is more widely distributed, occurring in Cumberland, Westmoreland, Wales, and the Isle of Man; the Lowther Hills, in Scotland; and the Wicklow Hills, in Ireland. In 1900, over 32,000 tons were smelted, yielding metal worth £418,000.

**Zinc** is frequently found in conjunction with lead. The chief sources of supply are Northumberland and North Wales. Over 9,000 tons were obtained in 1900, worth about £21 per ton.

In the same year, 14,000 ounces of **gold** (chiefly Wales) and 191,000 ounces of **silver** (chiefly the lead districts) were obtained, the value of which provided an excellent margin of profit.

**Limestone**, valuable as a flux in smelting, is generally abundant in or near the great coal-fields. About 12,000,000 tons were raised in 1900.

**Clay**, for making bricks and similar articles, is very general, especially in the south-eastern counties. The output in 1900 exceeded 14,000,000 tons. Kaolin, or china clay, is obtained chiefly from Cornwall and Devon.

**Salt** is plentiful in the valley of the Weaver in Cheshire (Northwich), and in Worcestershire (Stoke Prior and Droitwich). In 1900, out of 1,861,000 tons quite eleven-twelfths were obtained by inundation to yield brine for pumping.

**Granite** is chiefly quarried in massive stones for heavy building purposes, and for ornamental facing of public buildings, etc. The granites of Aberdeen, Galloway, and Galway are in great demand. Caithness and Forfar yield excellent *paving-stones*.

**Portland stone** is ground up into cement, the hard and quick-setting qualities of which render it particularly useful.

**Slate.**—Purple slates for roofing purposes are quarried in Wales, in the neighbourhood of Llanberis, Bethesda, and Ffestiniog. In Cumberland, beautiful green slates are obtained at Tilbesthwaite; in Scotland, slates of varying colours are found at Easdale in Perthshire, and Ballachulish in Argyle; and in Ireland, in Cork and Tipperary.

**Oil shale** is a black clay, found chiefly in the neighbourhood of the Forth estuary, from which paraffin oil can be expressed for burning and lubricating purposes.

## Manufactures.

The vast supplies of coal and iron, coupled with the energy and business capacity of its inhabitants, have gained for the United Kingdom a marked pre-eminence as a manufacturing country. The variety of its manufactures is only equalled by their general excellence, and British productions have always been held in high esteem in the markets of the world. The keen competition of other great trading nations in recent years is seriously threatening our supremacy, even if it has not already passed away from us in some quarters.

## The Textile Industries.

**Cotton.**—The importance of the cotton industry may be gathered from the fact that in 1900 the world's cotton manufactures were valued at over £119,000,000, of which our share was 66 per cent. It is one of the romances of industry that one county of one small country thousands of miles away from the nearest cotton-fields should monopolize so huge a trade.

In 1800, Lancashire consumed about 100,000 bales of cotton; in 1900, it required 3,334,000 bales. By means of the following tables it will be possible to compare the progress of Great Britain with other countries for a period of ten years :—

CONSUMPTION PER ANNUM IN BALES (500 lbs.).

Year.	United Kingdom.	Europe.	United States.	India.	Japan.
1889 .....	3,016,000	3,256,000	2,166,000	711,000	99,375
1900 .....	3,334,000	4,576,000	3,687,000	1,162,000	650,000

## NUMBER OF SPINDLES AT WORK.

Year.	United Kingdom.	Europe.	United States.	India.	Japan.
1888-1889.....	43,500,000	24,885,000	14,060,000	2,670,000	200,000
1899-1900.....	45,000,000	33,000,000	19,100,000	4,728,000	1,358,000

It will be seen that our percentage of increase is very small in comparison with that of our competitors.

THE CHIEF EXPORTERS OF COTTON MANUFACTURES  
(in million pounds).

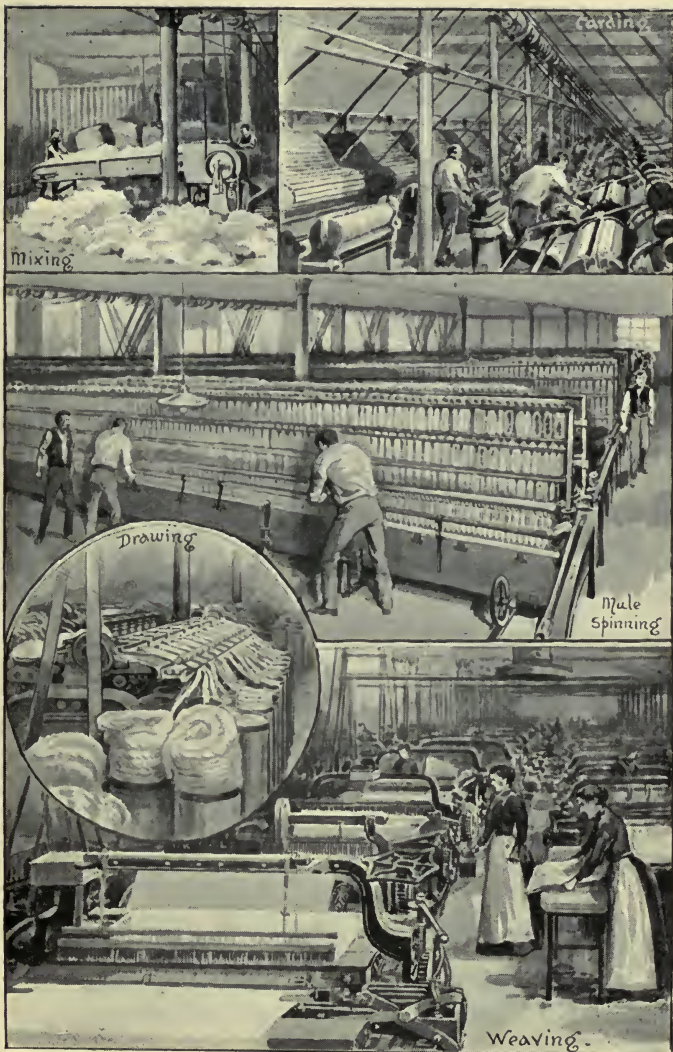
Country.	1898.	1899.	1900.
Great Britain.....	63	65	79
Germany.....	9	10	13
France.....	5	6	6
Switzerland.....	5	5	6
United States.....	3	4	4
Italy.....	2	2	2
India.....	4	5	4
Japan.....	2	3	3

British supremacy has been maintained, but it is increasingly evident that what was once almost exclusively a British industry is becoming more and more cosmopolitan. The rising exports of India and Japan indicate severe competition in the Eastern markets. The slow progress of the United States is remarkable, considering that she practically grows the world's supply of cotton.

The manufacture of cotton in England is confined almost entirely to Lancashire and a small portion of Cheshire. The principal towns engaged are Manchester, Blackburn, Oldham, Bolton, Bury, Preston, Rochdale, Wigan, Ashton, and Burnley, in Lancashire; Stockport and Dukinfield, in Cheshire; and Glossop and Belper, in Derbyshire.

In Scotland, the manufacture is largely centred in Lanarkshire, where dyeing and calico-printing are extensively carried on. Paisley (cotton thread) is the headquarters of the Scottish industry.

**Woollen.**—The woollen trade is much older than that of cotton. In 1801, we had to depend largely upon our own domestic supply of wool, the price of which varied from 1s. 1d. to 1s. 10d. per lb. In that year our imports were 7,000,000 lbs.; twenty-five years later, over 40,000,000 lbs.; in 1865, nearly six times as much; and



THE COTTON INDUSTRY.



in the year 1897 it had risen to 740,000,000 lbs.; in 1900 it had fallen to 559,000,000. In the same year, British wool averaged from  $4\frac{1}{2}$ d. to 11d. per lb., and that of Australia averaged 9d. The first Sydney wool that reached London in 1820 was sold at 3s. 6d. to 5s. per lb.

A Parliamentary report of 1874 showed that over 2,500,000 spindles and more than 80,000 looms were engaged in the industry. In 1825, our exports of woollen goods amounted to about £6,000,000; in 1865 it had more than doubled; and in 1895 reached £27,000,000. Since that time, owing to the M'Kinley tariff, our exports to America have decreased alarmingly, and in 1900 our total export of woollen goods only amounted to £21,790,823.

**Woollen** goods are made in the West Riding of Yorkshire, Gloucestershire, Wilts, and Somerset. The chief towns engaged are Leeds, Bradford, Halifax, and Huddersfield, in Yorkshire.



Stroud, in Gloucester, Bradford and Trowbridge, in Wilts, and Frome, in Somerset, chiefly manufacture woollen cloth. *Blankets* are made at Witney, in Oxfordshire; *flannels* at Rochdale and Halifax, and at Welshpool and Dolgelly in Wales. *Shoddy* is produced at Batley and Dewsbury, and *alpaca* at Bradford.

In Scotland, the woollen manufacture (tweeds) is chiefly limited to the valley of the Tweed—Peebles, Galashiels, Selkirk, Hawick, and Dumfries.

**Linen** manufacture is an unimportant branch of the English textile industries, Barnsley being the chief town engaged. In Scotland (Fife and Forfar) it is more important, obtaining the supply of flax from the Baltic countries. The chief towns are Dunfermline (table linen), Kirkcaldy (upholstery linen), Dundee, Brechin, and Arbroath (coarse linens, sailcloth, etc.). The linen manufacture is the chief industry of the north-east of Ireland. Belfast, Lisburn, and Lurgan (lawn, cambric, and fine linens) are the chief towns engaged.

**Silk** goods are made at Bethnal Green and Spitalfields (London), Macclesfield, Derby, Coventry, Leek, Congleton, and Manchester. *Velvet* and *velveteen* are made chiefly at Bradford.

**Hosiery** and **lace** are made at Nottingham, Derby, and Leicester; **gloves** at Worcester, Yeovil, and Woodstock; and **hats** at London, Stockport and Hyde (Cheshire), and Atherstone (Warwickshire).

**Carpets** are made at Kidderminster, Rochdale, and Halifax. The trade of Axminster (Devon) and Wilton (Wilts) has largely declined in recent years.

**Jute** and **hemp** spinning for rope for shipping, etc., is general all round the coast; but the manufacture of coarse sacking is mainly a Forfarshire industry.

### Metal Industries.

The wonderful development of the British **iron trade** in the nineteenth century was coincident with much of the material progress of that notable period; for without iron and steel our railways, steamships, bridges and aqueducts, gas and water works, labour-saving machinery, and modern munitions of war would not have been possible.

The industry, however, dates much farther back. Pepys, in his Diary of 1662, speaks of large ironworks of great antiquity in the Forest of Dean, with their "vast heaps of cinder." The following figures in the production of pig-iron will best mark the rate of progress:—

Year.	Tons.	Year.	Tons.
1740 .....	17,350	1830 .....	678,417
1788 .....	68,300	1860 .....	3,826,752
1806 .....	258,206	1880 .....	7,749,233

More recent figures will be found on page 106, in comparison with the production of some of Britain's competitors.

The following are the chief centres of the British iron industry:—

*North Yorkshire* and *Durham*.—Middlesborough rapidly rose into importance as a result of the discovery of a method of reducing the iron clays of the Cleveland Hills. The neighbouring towns, Stockton and Darlington, together with Newcastle and the Tyne ports, are largely engaged in smelting black or magnetic iron ore, imported from Sweden. Rotherham, in the West Riding, is another important smelting town.

The *Scottish coal-fields* largely engage in the iron industry at Glasgow, Airdrie, Kilmarnock, and Motherwell.

*South Wales* smelts red hematite obtained from Spain. Merthyr-Tydvil and Newport are the chief towns occupied.

*Lancashire* and *Cumberland* have their own valuable deposits of red hematite. Barrow-in-Furness is another town that has made phenomenal progress.

The *Midland* iron trade is principally confined to Birmingham, Wolverhampton, Dudley, Wednesbury, and the surrounding townships. The local supplies of iron ore are now largely exhausted, and during recent years the number of blast-furnaces in operation has greatly decreased.

#### LOCALITIES AND OUTPUT OF PIG-IRON IN 1900.

	Tons.		Tons.
North Yorkshire .....	2,136,000	Lancashire.....	730,000
Scotland .....	1,156,000	Staffordshire.....	596,000
Durham.....	973,000	Wales .....	584,000
Cumberland.....	856,000		

And Derbyshire, Lincolnshire, South Yorkshire, Leicester, Notts, and Northamptonshire in gradually decreasing quantities.

In 1900 there were over 400 **blast-furnaces** in operation in Great Britain (about one-half of the number in more prosperous times), producing 180,000 tons of pig-iron per day. At the commencement of last century little more than this was turned out in a year. About the year 1880 foreign competition began to make itself felt, and time has but accentuated the danger to the home industry.

The following table will illustrate the pressure, and the direction from whence it comes :—

#### PRODUCTION OF PIG-IRON (tons).

Country.	1884.	1889.	1899.
United States.....	4,097,000	7,603,000	13,620,000
Great Britain .....	7,812,000	7,999,000	9,421,000
Germany.....	3,600,000	4,524,000	8,029,000
France.....	1,871,000	1,732,000	2,567,000
Belgium.....	750,000	832,000	1,036,000

The chief feature of the above figures is the amazing progress of America and Germany, while we have been comparatively standing still. We are still easily first in the quantity of pig-iron

exported ; but we cannot reasonably hope to maintain our position in face of the increasing output of our competitors.

It is worthy of notice that one hundred and fifty years ago the competition of American iron was so severe that legislative measures were taken to prevent its import into any portion of the United Kingdom, except Ireland.

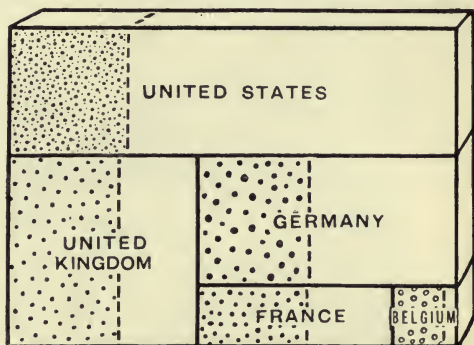
The growth of the British steel trade has been remarkable. Owing to its greater ductility, steel has almost entirely displaced wrought-iron, and this part of the iron industry has practically disappeared. In 1800

the production was 35,000 tons, in 1855 about 50,000 tons, the average price of which was £50 per ton. Then came the introduction of the Bessemer process, which gave the industry a startling impetus. In 1880 the output rose to 990,000 tons, and in 1899 to 4,850,000 tons, at a price as low as £3, 12s. per ton.

It is almost an impossibility to follow the ramifications of the iron industry, since iron and steel so readily accommodate themselves "to all our wants, our desires, and even our caprices."

**Machinery** is made in nearly all the chief centres of the great coal-fields, and Manchester, Birmingham, Leeds, Sheffield, and Glasgow have earned high reputations for the quality of their productions. The machinery used in the cotton industry is largely made at Manchester, Oldham, Rochdale, and Bury ; woollen machinery chiefly at Leeds, Bradford, and Keighley.

The Birmingham district—the **Black Country** (Wolverhampton, Walsall, Dudley, Wednesbury, etc.)—is *par excellence* the **hardware** district of the kingdom, manufacturing all varieties of metallic goods, from a *pin* or *button* to an *anchor*, *girder*, or *locomotive*. *Gun-barrels*, *armour-plate*, *tools*, *screws*, *nails*, *pens*, *pins*, *bicycles*, and *railway plant* are among the productions of Birmingham. Wolverhampton and Willenhall are famous for *locks*. *Nails* and



OUTPUT OF PIG-IRON.

Shaded portions represent output in 1884 ; white portions represent increase by 1899.





THE SHEFFIELD TRADES.

*chains* are made at Bromsgrove, Dudley, and surrounding districts. A distinguishing feature of Birmingham and the Black Country generally is the large number of small workshops.

The chief metal productions of the Northumberland and Durham coal-field are connected with *railway plant, shipbuilding, and heavy ordnance*. The chief towns engaged are Newcastle (where are the famous Elswick works), North and South Shields, Middlesborough, and Sunderland.

Sheffield is the centre of a busy iron and steel district—*iron and steel plates, tools, engine fittings, and rails*. Its *cutlery* is world-famed.

*Agricultural implements* are made at Norwich, Lincoln, Grant-ham, and Peterborough.

*Railway locomotives* are made at Crewe and Wolverton (L.N.W.R.), Swindon and Wolverhampton (G.W.R.), Derby (M.R.), and Peterborough and Doncaster (G.N.R.).

The Scottish iron industries generally resemble those of the chief English centres.

Some metal manufactures are almost, if not quite, localized. *Tin goods* are made in South Staffordshire and South Wales; *firearms and weapons of war* at Birmingham, Elswick, and the Government arsenals at Woolwich, Chatham, Plymouth, Devonport; *needles and fish-hooks* almost wholly at Redditch and the immediate neighbourhood.

The *electrical industry* may be said to have commenced with the telegraph, and the manufacture of telegraph plant is no mean industry in itself. Electricity now provides the telephone, lighting, power supply, tramways, motor vehicles, etc., and the whole industry is making remarkable progress. British manufacturers have hitherto neglected this branch, but the competition of America in particular has aroused them to the necessity of securing a fair share of the world's contracts.

*Bicycles* are made at Birmingham, Coventry, and Wolverhampton; *sewing-machines* near Glasgow.

### Miscellaneous Manufactures.

*Leather* is largely manufactured at Southwark and Bermondsey (London), Bristol, Stafford, Northampton, and Walsall.

*Boots and shoes* are extensively made at Northampton, Stafford, Wolverhampton, and Leicester; and *saddlery* largely at Birmingham and Walsall.

*Paper* is made in Kent, Hertfordshire, Bedfordshire, and in Midlothian, especially in the neighbourhood of Edinburgh.

The advance of education, cheap paper, the composition of type by machinery, and the invention of rapid printing machines (48,000 newspapers per hour), have given the *printing trade* a remarkable impetus. London, Glasgow, and Edinburgh are the chief centres.

*Clocks, watches, and jewellery* are made at Clerkenwell (London), Birmingham, Coventry, and Liverpool.

*Earthenware and China*.—The Potteries, in North Staffordshire (Stoke-on-Trent, Burslem, Hanley, Etruria, etc.), are engaged in the manufacture of pottery and earthenware of all kinds. Worcester and Derby are noted for china and fancy ware, and Lambeth for sanitary appliances.

*Glass* is extensively made at Newcastle, St. Helens, Birmingham and district, and London.

*Soap and candles* are made largely at London, Liverpool, Newcastle, Widnes, Leeds, and Glasgow.

The *chemical industries* of the kingdom are of great importance. Many former waste products are now utilized: for example, aniline dyes are obtained from coal tar, a by-product in the manufacture of gas. Sulphuric acid and soda, and other chemical products used in many of the manufactures, are largely produced at Glasgow, Newcastle district, and South Lancashire (St. Helens, Widnes).

## Food and Drink Industries.

**Dairy Produce.**—*Butter* is made in all agricultural districts, especially Yorkshire, Lincolnshire, Cambridgeshire, Essex, Oxfordshire, Gloucestershire, and Somerset; Clydesdale and Aberdeenshire dairies are famous. Irish butters are excellent, and large quantities are exported to England from the southern ports.

*Cheese* of more than ordinary excellence is made in Gloucestershire and Cheshire. The celebrated *Stilton* is produced in the neighbourhood of Melton Mowbray, and *Cheddar* in Somerset. Derby, Yorkshire, and Cambridgeshire are noted for cheese.

*Bacon and Hams*.—The curing of bacon and hams is very general; Wiltshire bacon and Scottish hams are noted. The bacon and hams of Ireland are unexcelled by any imported from the United States or elsewhere.

Fish-curing is carried on extensively at Yarmouth, St. Ives, and the Isle of Man.

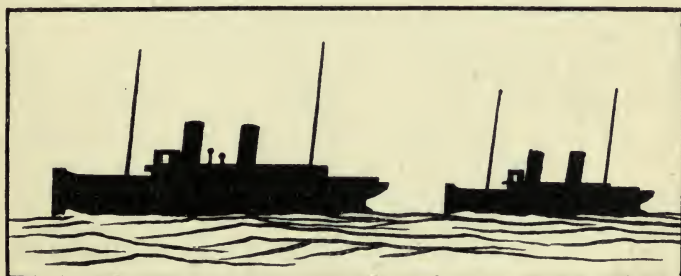
*Sugar* is refined on the banks of the Clyde, and at Liverpool and Bristol; *cocoa* and *chocolate* are manufactured at Birmingham (Bournville), Bristol, and York; and *jams* are made at London, Liverpool, Evesham, and in other fruit-growing districts.

The chief **drink** manufactures are *beer* and *whisky*—both products of barley. London, Edinburgh, and Dublin have noted breweries; but Burton-on-Trent is the chief brewing town in the world.

Whisky is distilled in nearly all the large towns of Scotland and Ireland. Cider is made chiefly in Hereford and Devon.

### Shipbuilding.

The British shipbuilders and marine engineers are the best in the world, and have largely assisted in establishing for us an overwhelming maritime supremacy.



BRITISH OUTPUT.

FOREIGN OUTPUT.

(Proportion, 17 to 8.)

The following is a comparison of our shipbuilding output with that of foreign countries in 1899, excluding vessels of less than 100 tons, of which there were quite one thousand:—

Country.	Number.	Tonnage.
United Kingdom.....	655	1,363,012
United States.....	154	207,345
Germany .....	98	227,898
France.....	55	69,933
Norway and Sweden.....	61	35,403
British Colonies.....	41	11,573
Other countries .....	125	90,570
Totals.....	1,189	2,005,734



About two-thirds of these were constructed of steel, and of our own output over 20 per cent. of the tonnage was built for foreign nations.

The chief British shipbuilding yards are situated on the banks of the Clyde, from Greenock to Glasgow; on the Tyne, Wear, and Tees (Newcastle, Sunderland, Stockton, Hartlepool); on the Mersey (Liverpool and Birkenhead); and at Belfast.

### Internal Communications.

The roads, railways, and canals of the United Kingdom are among the most perfect in the world.

Nearly 2,000 miles of navigable rivers, and about twice that length of **canals**, provide easy means of transport by barges. It is impossible to even briefly enumerate all the different canal systems; the following are the chief:—

1. Connecting the Humber and the Mersey by means of the rivers Irwell and Calder are three canals crossing the Pennine Range—

- (1) From the Humber to Manchester *via* Huddersfield.
- (2) From the Humber to Manchester *via* Wakefield, Halifax, and Rochdale.
- (3) From the Humber to Liverpool *via* Leeds, Burnley, and Blackburn.

2. The Trent and Mersey are joined by waterways intersecting the Potteries *via* Nottingham, Burton, Stoke-on-Trent, and Runcorn.

3. The Birmingham and Black Country district is connected by a network of canals with the Severn at Worcester, with the Trent *via* Lichfield and Tamworth, and with the Oxford Canal *via* Warwick and Napton.

4. The Thames is connected with the Severn—

- (1) By the Thames and Severn Canal, passing through Lechlade and Stroud.
- (2) By the Kennet and Avon Canal, *via* Bath and Bristol.

The Thames and Trent are connected by means of the Grand Junction and the Grand Union Canals *via* Watford, Wolverton, and Leicester.

5. The Oxford Canal runs almost directly north, joining the Birmingham system at Napton, and then proceeding to Rugby and Burton.

The Gloucester Ship Canal is 14 miles long, and enables large vessels to reach Gloucester from the Bristol Channel.



CANAL MAP OF ENGLAND.

The **Manchester Ship Canal** has a length of 35 miles, with a width of 170 feet at the top and 120 feet at the bottom. It commences at Manchester, and passes through Barton to Warrington, thence to Runcorn, and keeping parallel to the river, *viâ* Ellesmere Port to Eastham, near Birkenhead, where it enters the Mersey. It is connected with nearly all the chief canal systems of the North and Midlands. It was constructed at a cost of nearly £11,000,000, and in the last six months of 1900 earned over £60,000 profits. Over 4,500 vessels passed through the canal during the year. The docks at Manchester cover over 250 acres, with 5 miles of quays; and owing to the rapid increase of traffic, additional docks are being constructed.

In Scotland, the Forth and Clyde are connected by the Forth and Clyde Canal from Grangemouth to Glasgow, with branches serving the whole of the Scottish coal-fields.

The **Caledonian Canal** is a ship canal which saves coasting vessels the necessity of passing through the stormy waters of the north. It is 60 miles long, 37 miles of which are in Lochs Ness, Oich, Eil, and Lochy.

The **Crinan Canal** cuts through the Cantire peninsula.

In Ireland, the Liffey and Shannon are joined by the Grand and Royal Canals.

The **Grand** joins the Shannon midway between Loughs Ree and Derg *viâ* Tullamore.

The **Royal** joins north of Lough Ree *viâ* Mullingar.

Much of the advantage which the canals of the country might confer on traders is discounted by the fact that they are largely controlled by railway companies, who do all in their power to crush out competition by canal carriers, with a view to keeping up railway rates. It is of national importance that our industries should not be hampered by excessive freight charges, whether by rail, canal, or sea. Of the 3,907 miles of canals in the United Kingdom, 1,139 miles are owned by railway companies.

## Railways.

At the end of 1900 there were 21,850 miles of railway open in the United Kingdom, over 15,000 of which are in England and Wales. The lines are owned by quite a hundred and fifty companies, with a paid-up capital of £1,175,000,000, but are really controlled by less than threescore companies.

The number of passengers carried during the same year was





VIEWS ON THE MANCHESTER SHIP CANAL.



1,144,026,490; the trains (goods and passengers) travelled 396 million miles; the total income was over 101 million pounds, and the expenditure 60 millions. The enormous traffic requires over 21,000 locomotives, 66,000 passenger carriages, and 690,000 goods wagons of various kinds.

The railways so intersect each other, and the various companies possess running powers over each other's lines to such an extent, that it is difficult to mark the limits of each particular system.

London is the great railway centre of Great Britain, and from it radiate nine great systems, the first three of which are arranged below in order of passenger traffic:—

**I. Great Eastern** (Liverpool Street).

1. London (Liverpool Street) to Great Yarmouth *via* Ipswich, with branches to Harwich (Continental packet station) and Lowestoft (fish traffic).
2. London, *via* Cambridge, Ely, and Lincoln, to Doncaster, where it connects with the North-Eastern.

**II. London and North-Western.**—From London (Euston) to Carlisle *via* Rugby, Stafford, Crewe, Wigan, Preston, and Lancaster. Important lines branch off at Rugby to Peterborough, and another to Birmingham and Stafford; from Crewe the main line to Ireland runs *via* Chester, North Wales, and Holyhead for Dublin; Crewe to Liverpool is an important branch.

**III. Great Western.**—From London (Paddington) to Birkenhead *via* Didcot, Oxford, Warwick, Birmingham, Shrewsbury, and Chester. Its chief branches are—

1. To Exeter *via* Bath, Bristol, and Taunton.
2. To Milford Haven *via* Swindon, Gloucester, Cardiff, Swansea, and Pembroke.

**IV. Great Northern.**—From London (King's Cross), *via* Peterborough and Retford, to Doncaster, where the **North-Eastern** continues to York, Durham, Newcastle, and Berwick.

**V. Midland.**—From London (St. Pancras) to Carlisle *via* Bedford, Leicester, Chesterfield, Sheffield, Leeds, and Settle. Branches are thrown off through Derby to Manchester and Liverpool; and through Burton, Birmingham, Cheltenham, and Gloucester to Bristol.

**VI. Lancashire and Yorkshire.**—From Liverpool to Normanston *via* Wigan, Bolton, Bury, Rochdale, and Wakefield.

**VII. Great Central** (formerly Manchester, Sheffield, and Lincoln Railway).—From London (Marylebone) to Manchester



RAILWAY MAP OF ENGLAND.



and Liverpool *via* Rugby, Leicester, Nottingham, and Sheffield. This line was opened in 1899.

The following lines serve the south-eastern counties, and carry much of the traffic for the Continent and the Overland Route to the East:—

VIII. **South-Eastern and Chatham.**—From London to Dover *via* Tunbridge, Ashton, and Folkestone.

IX. **London, Chatham, and Dover.**—From London to Dover *via* Rochester and Canterbury.

X. **London, Brighton, and South Coast.**—From London to Brighton, Portsmouth, and Isle of Wight.

XI. **London and South-Western.**—From London (Waterloo)





to Exeter and Plymouth *via* Salisbury and Yeovil, with branches to Southampton and Portsmouth.

The railways of Scotland may be best viewed from their connections with the English systems.

At Carlisle (West Coast Route) there are two main lines into Scotland:—

1. **Caledonian** (a continuation of L.N.W.R.), to Glasgow *via* Lockerbie and Carstairs, and thence to Falkirk, Stirling, Perth, and Aberdeen.
2. **North British** (a continuation of M.R.), to Edinburgh *via* Hawick and Galashiels, and thence to Dundee (*via* the Forth and Tay bridges), Arbroath, Montrose, and Aberdeen.



From Carlisle there is an alternate route to Glasgow by the **Glasgow and South-Western**, *via* Dumfries and Kilmarnock.

There is also a **North British** line (East Coast Route) from Berwick to Edinburgh *via* Dunbar.

From Perth the **Highland Railway** extends across the middle of the country to Inverness, to which town also comes the **Great North of Scotland** line from Aberdeen *via* Elgin and Nairn.

The railways of Ireland are not nearly so complicated as in England and the south of Scotland.

1. **Midland Great Western**.—From Dublin to Galway, with branches to Westport and Sligo.

**Great Northern**.—Dublin to Portadown, where it branches off east to Belfast, or north-west to Londonderry, which towns are also connected by the **Belfast and Northern Counties** line.

3. The **Great Southern and Western**.—From Dublin to Cork *via* Kildare, Thurles, and Charleville, with branches to Limerick and Athlone.

4. **Dublin, Wicklow, and Wexford**.—This line traverses the counties named.

It has been proposed to construct a tunnel to connect Ireland and Great Britain, from points near Larne and Portpatrick respectively. The total length of tunnel required under sea is about 25 miles, with tunnel approaches of 10 miles, and the estimated cost between £10,000,000 and £12,000,000. It is claimed that the suggested line would not only take the Irish, Scottish, and north of England traffic, but to shorten the Atlantic passage would also attract considerable American traffic, and would probably cause direct steamship service between the west of Ireland (Galway) and America.

With a view of facilitating communication with the Continent, a tunnel underneath the Strait of Dover was commenced some years ago. Over 2,000 yards of the work were completed, but the failure to obtain the sanction of Parliament, and the uncompromising opposition of the Government, caused the scheme to be abandoned. Though the tunnel would offer considerable advantages, especially to British trade with France, it is generally thought inadvisable to endanger the undoubted value of Great Britain's insular position.

## Shipping.

The merchant shipping under the British flag is almost equal to the combined mercantile navies of the world. (See page 80.) The shipping of the empire includes over 34,000 registered vessels, to which may be added more than 26,000 fishing boats. The following figures are extracted from Lloyd's Register for 1900 :—

	Vessels.	Tonnage (net).
United Kingdom.....	20,196	9,164,342
Greater Britain .....	14,700	1,437,857
	34,896	10,602,199

## Trade of the United Kingdom.

The trade is enormous, and in the year 1900 reached the highest point in the history of the nation.

### IMPORTS AND EXPORTS 1890-1901.

Year.	Imports.	Exports.	Total Trade, Imports and Exports.
	Million pounds.	Million pounds.	£
1890	420	328	748,944,115
1891	435	309	744,554,982
1892	424	291	715,434,048
1893	404	277	681,826,448
1894	408	274	682,130,677
1895	417	285	702,522,065
1896	442	296	738,118,118
1897	451	294	745,203,078
1898	470	294	764,558,690
1899	485	329	814,570,241
1900	523	354	877,448,917
1901	522	348	870,584,718

Discarding a few exceptional years, British trade shows a constant upward tendency—a feature which is particularly marked in the matter of imports. In the last-named year the imports were £12, 11s., and the exports of British produce £6, 14s. 10d. per head of the population. In 1854 the figures were £5, 10s. 2d. and £4, 3s. 10d. respectively.

The subjoined tables and diagrams give the origin and destination of about nine-tenths of the trade in 1900.

### Imports.

*Foreign.*

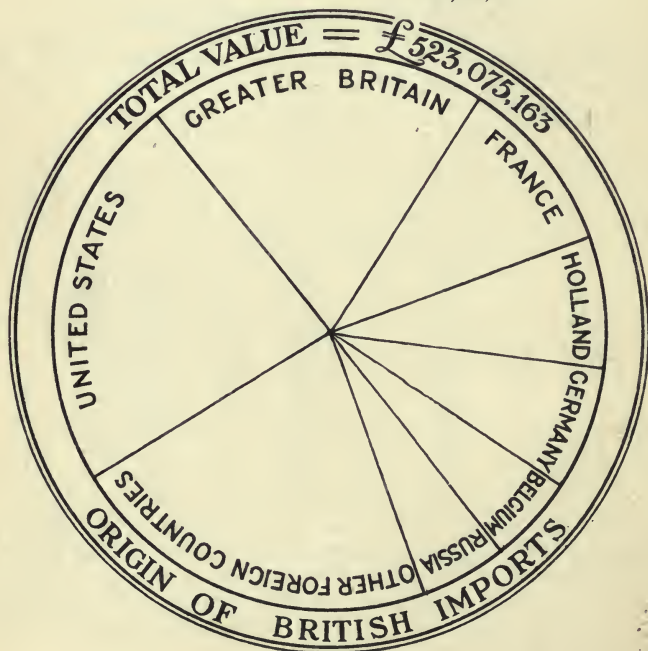
*Greater Britain.*

(In million pounds approximate.)

United States.....	139	India .....	27
France.....	54	Australia.....	23
Holland.....	31	Canada.....	22
Germany.....	31	New Zealand.....	10
Belgium.....	24	Straits Settlements.....	7
Russia.....	22	Cape Colony.....	7
Scandinavia.....	16	Ceylon.....	5 $\frac{1}{2}$
Spain.....	16	Channel Islands.....	1 $\frac{1}{2}$
Argentina.....	13	West Indies (British).....	1 $\frac{1}{2}$
Egypt.....	13	Lagos.....	1

#### Total Imports.

Foreign .....	£413,544,528
Greater Britain.....	109,530,635
	<u>£523,075,163</u>



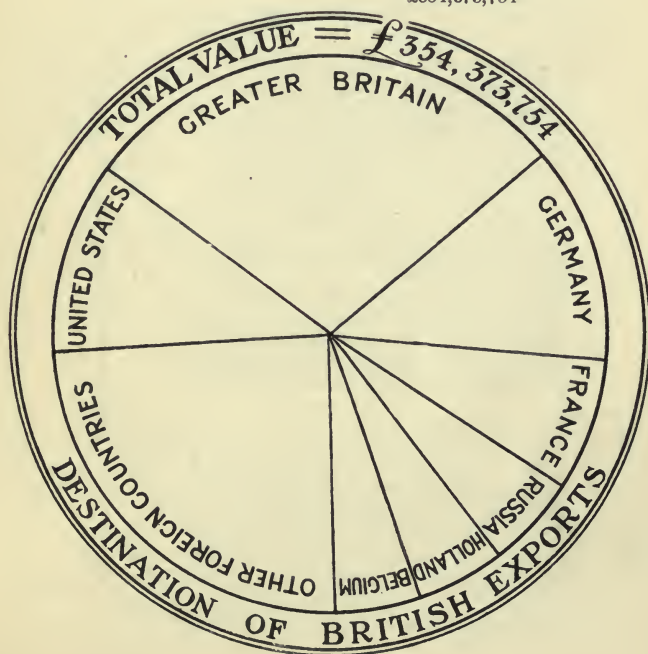
## Exports.

*Foreign.**Greater Britain.**(In million pounds approximate.)*

Germany .....	39	India .....	31
United States .....	37	Australia .....	24
France .....	26	Cape Colony .....	10
Russia .....	16	Canada .....	9
Belgium .....	15	New Zealand .....	6
Holland .....	15	Natal .....	4
Scandinavia .....	10	Hong-Kong .....	3
Japan .....	10	Straits Settlements .....	3
Italy .....	9	West Indies (British) .....	2
Argentine .....	7	Ceylon .....	2
China .....	6	Channel Islands .....	1
Brazil .....	6	Maltese Islands .....	1

*Total Exports.*

Foreign .....	£252,349,700
Greater Britain .....	102,024,054
	<u>£354,373,754</u>



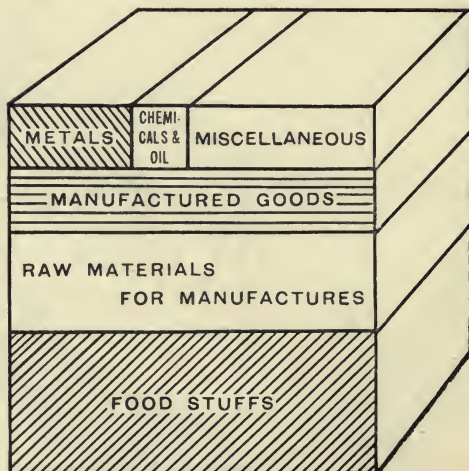


## Analysis of British Imports.

Our imports consist chiefly of three great classes—(a) Food stuffs; (b) raw materials for manufactures; (c) manufactured goods.

In 1900 the values of the most important articles were:—

(a)	Millions.
1. Animals, meat, and fish .....	£46
2. Dairy produce (butter, cheese, eggs).....	32
3. Wheat and corn stuffs.....	58
4. Tea, sugar, coffee.....	33
5. Fruits, hops, currants, and raisins .....	11½
(b)	
1. Raw cotton .....	£41
2. Wool.....	22
3. Hemp, flax, jute.....	10
4. Timber.....	27
5. Metal (raw and wrought).....	36
6. Chemical and dye stuffs.....	5½
7. Tobacco (raw and manufactured).....	5
(c)	
1. Manufactured silk .....	£14
2. Manufactured woollen.....	11
3. Manufactured cotton.....	4
4. Leather, dressed hides, etc. ....	8½
5. Wines .....	5



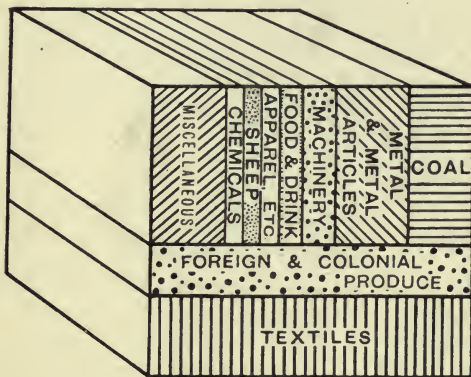
BRITISH IMPORTS.

### Analysis of British Exports.

The exports are mainly manufactured goods, coal, and colonial and other produce.

In 1900 the values of the most important articles were:—

	Millions.
Cotton (twist, yarn, and manufactured goods)....	£69½
Woollen (yarn and manufactures).....	21½
Linen and jute.....	16
Clothing and haberdashery.....	6½
Iron and steel manufactures.....	32
Machinery and engines.....	19½
Ships and ship machinery.....	8½
Hardware, cutlery, leather.....	5
Chemicals, dyes, and drugs.....	9
Coal.....	38



BRITISH EXPORTS.

Coal occupies a unique place among British exports in that it really amounts to the export of the capital wealth of the country. The export shows a steady increase:—

Year.	Tons.
1891.....	31,000,000
1895.....	33,000,000
1898.....	36,000,000
1899.....	41,000,000
1900.....	44,000,000

France is by far the best customer for coal, and the growth of the trade for three years presents some remarkable features:—

	Tons.	Value.
First six months of 1898.....	2,672,000	£1,166,000
” ” ” 1899.....	3,420,000	1,613,000
” ” ” 1900.....	4,230,000	3,246,000

The total exported to France in 1900 was 8,314,000 tons. Italy is another large buyer, since she possesses practically no coal measures of her own; to this country we exported 5 million tons. Germany took 6 million tons, Russia 3 millions, and Spain 2 million tons.

In 1900 the total exports of coal and coke reached 46,098,000 tons, to which may be added over 11 million tons for use of steamers engaged in foreign trade. These demands upon the native supplies have tended to increase the price of coal for home consumption. Early in 1901 a duty of 1s. per ton was imposed on all coal exported. For many of the vessels carrying food stuffs and raw materials to our shores coal is the only available return cargo. Ballast is expensive, whereas coal pays for its carriage and yields a profit.

**Excess of Imports.**—It is often alleged that the great excess of imports over exports is a sure sign of economic decay. But neither an excess of imports nor an excess of exports is a reliable indication of commercial prosperity or the reverse. In this connection we must take into account our income from foreign and colonial investments, a form of “invisible exports” that goes to redress the balance between imports and exports.

#### INCOME FROM FOREIGN AND COLONIAL INVESTMENTS.

##### ASSESSMENTS TO INCOME-TAX UNDER SCHEDULES C AND D.

	1880-1.	1898-9.
Indian Government stock.....	£2,848,000	£3,606,000
Indian railways .....	4,465,000	4,652,000
Colonies and foreign countries.....	11,937,000	18,233,000
Railways out of United Kingdom .....	2,610,000	13,884,000
Foreign and Colonial securities .....	8,088,000	19,332,000
	£29,948,000	£59,707,000

In less than twenty years our income from foreign and colonial investments has increased by £30,000,000 per annum—a fact that



THE LOWER THAMES.



should bring comfort to the pessimist, whose cursory study of trade returns leads him to fear the nation has commenced to live upon its capital.

### Ports.

The chief ports, as marked by tonnage entered and cleared, and excluding coasting vessels, are:—

1900.

Port.	Number of Ships.	Tonnage.
London.....	11,074	16,529,075
Cardiff.....	4,601	13,420,355
Liverpool.....	3,539	11,818,000
Newcastle.....	5,029	6,170,720
Hull .....	3,405	4,585,183
Glasgow.....	...	3,612,934
Southampton .....	2,257	3,122,453

These ports alone account for more than one-third of the total tonnage entering and clearing from all the ports, and in point of value a much larger proportion.

The number of vessels entering Liverpool is small considering the total tonnage; which is accounted for by its being the headquarters of the lines of gigantic Atlantic liners.

**London** was an important port even in Roman times, and the "mart of many nations resorting to it by sea and land." Bede's statement is still more true to-day; for notwithstanding the rise and progress of nations, London is the greatest and wealthiest city on the face of the earth, and the throbbing hub of the world's commerce. All the great waterways of the world lead to it. It is the "central market of markets," and there are no regions with which it does not transact business, and no produce or article of any kind with which it is not prepared to do business. Here are the headquarters of the banks, railways, and great commercial corporations of the United Kingdom, together with representative branches of the principal ones of other countries. "The centre of the world is the Bank of England in Threadneedle Street. There is not an occurrence.....that does not report itself instantly at this sensitive spot. Put your ear at the door of the Bank, or of the Royal Exchange near by, and you hear the roar of the world."

The Thames is navigable right into the heart of the city, and the "pool" at London Bridge is always congested with shipping.

Below are miles upon miles of docks and wharves, and only at Gravesend, 30 miles from London Bridge, does the Port of London come to an end.

**Liverpool** (with *Birkenhead*) has magnificent dock accommodation at the mouth of the Mersey, where it attracts the bulk of our American trade. Unlike those of London, its commercial interests, especially in imports, are somewhat restricted and specialized. Its inward movement is largely bound up in cotton, grain, cattle, and wheat. On the other hand, it exports more manufactured goods (especially cotton) than any other port, and almost monopolizes the passenger trade with America. Eight of the great railways have running powers to this port. The opening of the Manchester Ship Canal must affect the movement of trade considerably; but the rapid increase in our imports from America, particularly food stuffs, seems to point out that what Liverpool may lose to Manchester in cotton, may be counterbalanced in other commodities.

**Cardiff** (with *Barry Dock*), on the Bristol Channel, as might be expected from its situation, is chiefly interested in the coal and iron trades of South Wales. Its rapid rise has been largely brought about by the removal of numerous iron and other works from the inland districts to the coast—a course forced upon manufacturers by excessive railway rates, and still more largely by the extraordinary demand for Welsh coal. Though the tonnage of this port exceeds that of Liverpool, in point of value and general importance it does not nearly approach it.

**Tyne Ports** (*Newcastle, North and South Shields*) are the outlets of the coal, iron, and steel trades of the northern coal-field. The Tyne banks are almost continuous lines of workshops, where iron, steel, glass, chemicals, pottery, etc., are manufactured. All these gravitate to the ports; but Newcastle, notwithstanding, “lives by coal and is black with coal.”

**Hull** is largely engaged in the North Sea and Baltic trade. The products of the Midland coal-fields and the woollen and iron manufacturing districts of Yorkshire provide ample business for its progressive dock facilities.

**Southampton**, lying at the farthest point from the great industrial centres, does not attract the same class of business as the foregoing ports. It is first and foremost a mail-packet station for South Africa and the East, dealing with an enormous passenger traffic and goods for speedy delivery.

**Bristol**, though it sent our first steamship, the *Great Western*,

across the Atlantic, has not overcome its natural disadvantages in a winding river perilously shallow at low tide. Its trade is chiefly with Ireland, the West Indies, and South America, and this, with its tobacco and sugar manufactures, makes it of importance among English ports. Specially-constructed steamers carrying fruit (bananas, etc.) from the West Indies have added to the prosperity of the port.

**Glasgow** is the second city in the kingdom. Its close proximity to the Atlantic, backed by the Scottish coal-fields with their varied manufactures, makes it the counterpart of Liverpool in some respects. "Glasgow yields to Liverpool only in its shipping; approaches Manchester in its cotton-spinning; Newcastle in its coal; exceeds the Thames and the Tyne in its iron shipbuilding; and equals Merthyr-Tydvil and Wolverhampton with its iron furnaces; while the industry and perseverance of its inhabitants have converted the shallow Clyde into a broad and deep dock for a navy of the largest merchant ships." Much of the Clyde tonnage enters and clears from Greenock. It has a large foreign trade and extensive shipbuilding yards, sugar refineries, cotton, woollen, and iron manufactures.

### People and Government.

**Population.**—The population of the United Kingdom on April 1, 1901, was 41,454,578.

England and Wales.....	32,524,075
Scotland.....	4,471,957
Ireland.....	4,456,546

The population of Ireland steadily decreases, and it is now little more than half what it was in 1841. The following table shows the population from 1841–1901 in millions (approximate):—

	1841.	1851.	1881.	1891.	1901.
England and Wales.....	16	18	26	29	33
Scotland.....	3	3	4	4	4
Ireland.....	8	7	5	5	4

**Emigration.**—Until 1815 there was little emigration from the United Kingdom, and in that year the emigrants numbered little more than 2,000. By the year 1852 nearly 3,500,000 had left our shores, and at the end of 1899 the total number had increased to 15,000,000.

In the year 1900 the emigrants (British and foreigners) numbered 299,238, the greater number of whom went to the United States, British North America, and Australasia.

To British North America.	To United States.	To Australia.	To other Places.
50,445	189,447	15,782	43,564

**Post Office.**—In the United Kingdom at the end of 1900 there were nearly 22,000 post-offices and more than 32,000 pillar letter-boxes, and the Department employed 167,000 persons of all grades. The postal telegraph system possesses 44,970 miles of line. The following figures point out the enormous work of the British Post Office, and emphasize the remarkable growth during the last ten years of the century just ended.

LETTERS, ETC., DELIVERED IN THE UNITED KINGDOM, 1890 AND 1900 (in millions).

	Letters.	Average per Head.	Postcards.	Packets, Newspapers, and Parcels.	Telegrams.
1890....	1,650	44	217	601	62
1900....	2,247	55	400	941	90

**Government.**—It is from the British Isles that His Majesty's Government has to administer the affairs of an enormous empire.

“It has to conduct the relations of that empire with every foreign State, civilized or uncivilized, all over the world. It has to administer the affairs of a great Indian Empire—a task the like of which does not devolve upon any other government in the world.

“It has to regulate the relations of the mother country with vast self-governing colonies, to provide to a certain extent for the government of those great communities, to watch over their interests, and to regulate their relations with each other and with ourselves.

“Our Government has vast naval and military departments to administer, not to speak of the Post Office and Telegraph Department, which are in themselves departments as great as any of those railways or industrial companies with whose affairs we are acquainted. Above all, it has to superintend the collection and the expenditure of an enormous revenue.”



## CHAPTER IX.

### WHERE BRITISH TRADE LIES.

#### Chief Regions and Routes.

THOUGH the commerce of the United Kingdom is so vast and far reaching, it is for the most part confined to more or less easily-defined sea routes. These routes may be classified in various ways, but treating the continents separately presents several points of convenience.

I. **Commercial Relations with Europe** (with the portions of Asia and Africa bordering upon the Mediterranean).—The trade falls naturally into four great divisions:—

1. The North Sea trade.
2. The Baltic trade.
3. The south-west coast trade.
4. The Mediterranean trade.

THE NORTH SEA TRADE embraces the coast of Europe from the north of Norway to the Strait of Dover, and is mainly controlled by our east coast ports from London to Peterhead.

To Norway (Christiania, Drammen, Bergen, and Christiansund) go cotton, woollen, and metal manufactures; and in return we receive timber, wood pulp, tar, fish, ice, condensed milk, and feathers. Farther south our trade is largely limited to Hamburg and Bremen (Germany), Amsterdam and Rotterdam (Holland), Antwerp (Belgium), and Dunkirk (France), to all of which we forward textile manufactures, hardware, machinery, and large quantities of coal.

From the German ports we receive sugar, timber, hides and leather, glass, woollens, metal manufactures, agricultural and dairy produce, musical instruments, etc. From Holland we obtain woollens, margarine, silk, sugar, butter, iron, and steel; and from Belgium silk, cotton, glass, iron, woollens, flax, and eggs. It



ROUTES TO CONTINENT.

is difficult to trace the origin of our imports from these two countries, for they are not necessarily their own products. A great deal of the Swiss (watches, clocks, gloves, condensed milk), Austrian (wine, glass, paper), and German trade passes through their borders. From the French ports (Dunkirk, Calais, and Boulogne) come wines, liqueurs, fancy fabrics, etc.; in addition to which they control a great deal of the passenger traffic across the Strait of Dover.

**THE BALTIC TRADE.**—The Baltic Sea leads to countries whose wealth lies chiefly in their forests and agriculture, rather than in mineral deposits or manufacturing industries. The navigation of its waters is by no means easy, owing to shallows, and the passage of the Skager Rack and Cattegat is even dangerous. For several months in the year the sea is partially frozen, and the approaches to Russia at least require the constant services of specially-constructed steam ice-breakers.

**The Kaiser-Wilhelm Ship Canal**, which was opened in 1895, has very considerably modified the dangers of the Baltic trade, in addition to shortening the route—in the case of London to the Baltic, about 175 miles.

Copenhagen, on the Sound, is the chief centre of the Danish, and much of the Swedish, trade. Here are sent for distribution coal, woollen, cotton, and silk goods, iron, hardware, wine, tea, and colonial produce. The return cargoes are almost entirely agricultural and dairy produce (Danish butter and eggs, etc.).

The Swedish ports (Gothenburg, Malmö, Norrköping, and Stockholm) take textile manufactures (especially woollens), coal, metals, and machinery, and send out timber and timber products, iron ore (for best steel), butter, paper, and matches.

From Russia, chiefly through St. Petersburg, Riga, and Revel, come corn, timber, flax, and eggs in order of value, taking in return metals of all kinds, machinery, and textiles.

Though most of the German coast-line borders on the Baltic, by far the greater portion of its commerce falls to the North Sea ports. The chief Baltic ports are Kiel, Stettin, Dantzic, and Königsberg, from which are exported German productions generally; and we send them textiles, coal, iron, machinery, and fish.

**THE SOUTH-WEST COAST TRADE.**—It is not easy to investigate the destination of a great deal of our trade that crosses the English Channel. Much of it goes to France *via* Dover, Folkestone, Newhaven, Southampton, and Weymouth. From Havre, Dieppe, and the Strait ports we receive textiles of fine texture



(especially silk), millinery, sugar, butter, eggs, fruit and vegetables, and fancy goods, a great portion of all of which goes to London. The wine trade of Bordeaux and Nantes is confined largely to London, Liverpool, and Leith. France in return takes British goods to less than half the value; coal far outstrips all others; textiles, machinery, chemicals, iron and steel, and leather goods.

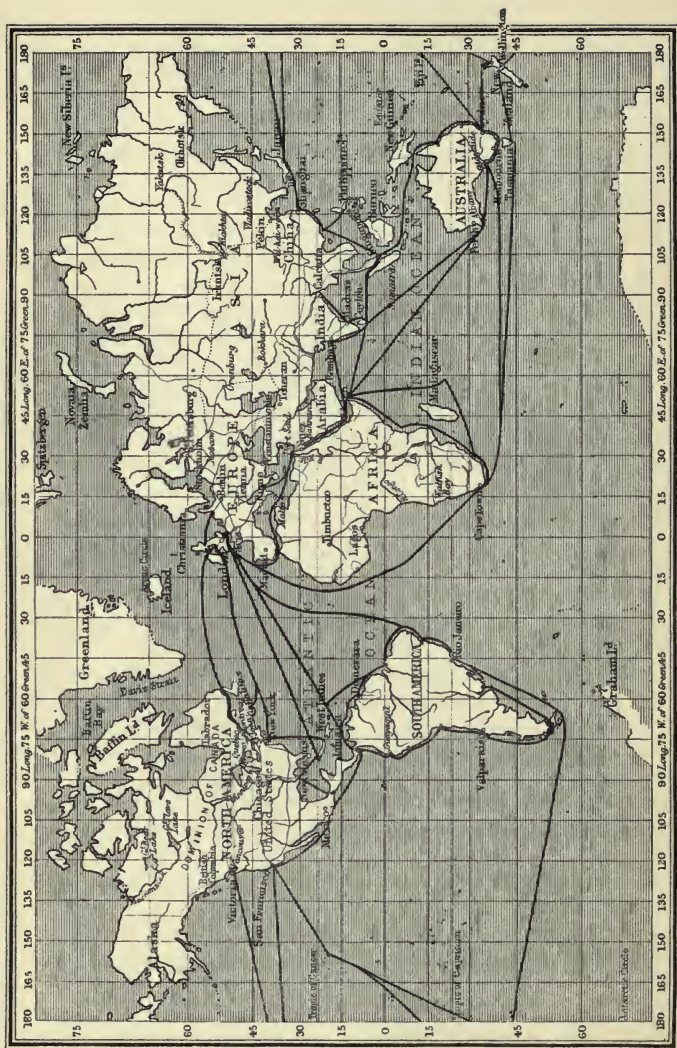
The chief export of the north of Spain is iron ore, shipped to South Wales and other of our smelting centres. From the western coast of the Spanish peninsula (Oporto, Lisbon, Cadiz) we obtain wines, fruit, cork, and copper. British coal, metals and metal manufactures, and cottons are chiefly in demand.

THE MEDITERRANEAN TRADE.—The Mediterranean is the most important inland sea in the world, and since it was connected with the Red Sea by the Suez Canal, in 1869, has become the great commercial highway to the East, this route being 5,000 miles shorter than *via* South Africa. Its local trade is as varied as it is enormous. The wines and fruits of Spain (Malaga, Valencia, and Barcelona); the varied products of the south of France (Marseilles); the wine and oil, fruits and silk, glass, marble, and sulphur of Italy (Genoa, Naples, Palermo, and Messina); the wine, grain, and flour, and precious ores of Austria (Trieste and Fiume); the currants and oil of Greece (Piræus, Nauplia, Patras); the wheat, goats' hair, tobacco, opium, and perfumes of Turkey (Constantinople and Galatz); and the corn and petroleum of Russia (Black Sea ports—Odessa and Batum), come in one endless procession to our shores. Smyrna (Asia Minor) sends us raisins, carpets, olive oil, tobacco, perfumes, etc., collected from even as far as distant Persia. The north of Africa, too, contributes its quota—the cotton and wheat of Egypt; the wool, hides, dates, gums, ivory, and feathers of the Barbary States, which come along the caravan routes from the interior to the coast.

Everywhere in the Mediterranean area there is a demand for British produce—coal and iron, fish (Roman Catholic countries), machinery and hardware, textiles, and all the productions of our varied industries.

British interests in the Mediterranean do not end with its trade in that area. It is still more important as a link in our route to India and the Far East. At the entrance to the Sea we possess Gibraltar, and south of Sicily the island of Malta, both strongly fortified, and important naval bases and coaling-stations; and in the Levant we own the island of Cyprus. For the better protection of the Suez Canal, Egypt has been occupied by the





THE WORLD'S TRADE ROUTES.

British since the Egyptian rebellion in 1882—a course that has not altogether met with the approval of rival nations. Our claims, however, to safeguard the canal are indisputable. We own 176,602 shares out of a total 400,000, and about 66 per cent. of the vessels passing through it are British. The shares were purchased from the Khedive of Egypt in 1875 for £3,976,582; their present value is estimated at £24,000,000, and in 1900 the dividends and interest paid to the British Government amounted to over £800,000.

**II. Commercial Relations with Asia.**—Until the opening of the Suez Canal the bulk of our trade with Asia passed round the Cape of Good Hope; a smaller portion trickled overland to the Levant ports. Nowadays the shorter route is generally preferred.

Traversing the Mediterranean, vessels enter the Suez Canal, passing thence into the Red Sea, at the southern entrance to which is Aden, a British coaling-station. From this point vessels may go to the Persian Gulf (Muscat and Bushire) for the horses, dates, and drugs of Arabia, and the silk, tobacco, wool, carpets, and perfumes of Persia; to India (Bombay, Madras, and Calcutta) for cotton, rice, tea, wheat, indigo, etc.; to Ceylon (Colombo) for tea, coffee, cinnamon, and pearls; to Burma (Rangoon) for rice, teak, and rubies; and to Singapore for the spices and tin of Malaysia and the East Indies. We are still on the route to the Far East, and at Hong-Kong (British) and the Chinese and Japanese ports may be obtained cargoes of tea, silk, rice, porcelain, and various other productions.

Asiatic industries (except Indian and Japanese cotton spinning) are not very highly developed, and their surplus products are food stuffs and raw materials. In return, all along the route we distribute every class of British manufactures.

**III. Commercial Relations with Australasia.**—There are *four* routes to Australia and New Zealand—(1) *viâ* Suez Canal and Indian Ocean, and (2) *viâ* the Cape and Indian Ocean. By the former it is 11,267 miles from London to Melbourne, and by the latter some three or four hundred miles more. (3) Crossing the Atlantic and rounding Cape Horn is over 13,000 miles between the same ports. (4) Across the Atlantic to Canada, thence by Canadian Pacific Railway to Vancouver, and thence by steamer to New Zealand, is over 12,000 miles, and another thousand to Australia. The two first-named routes are oftenest used. In the case of sailing vessels, the outward course from Britain is *viâ* the

Cape, returning *viâ* Cape Horn, in each case taking advantage of the trade winds. The fourth-named route, *viâ* Canada, is also shorter, and more direct to China and Japan.

Raw materials are almost the only cargoes obtainable, wool, gold, and meat being the chief; other important articles are timber (hard woods for paving), copper, wines, sugar, and coffee (Queensland). The dairy produce and frozen mutton trade of New Zealand is attaining enormous proportions. All British productions are in demand, especially clothing, iron and steel, machinery, railway plant, etc. The chief ports traded with are Melbourne, Sydney, Adelaide, and Brisbane (Australia), and Wellington and Dunedin (New Zealand).

**IV. Commercial Relations with Africa.**—The trade of Northern Africa has already been discussed in connection with the Mediterranean, but there remain three great trading divisions—namely, West Coast, British South Africa, and the East Coast.

**THE WEST AFRICAN TRADE** consists chiefly of rubber, palm and other oils, ivory, gold dust, etc., which is collected at the ports (Freetown, Accra, Lagos, Bonny, and Gulf of Guinea ports generally). The wants of the natives rarely exceed cottons, hardware, and cheap spirits. The vile traffic in this last has been placed under severe restrictions in British territories. Railway plant is also an increasing item of trade.

**THE SOUTH AFRICAN TRADE** consists of raw products, diamonds, wool, copper, gold, grain, hides, and skins, and ostrich feathers. The ordinary imports into British South Africa are clothing, textiles, iron and steel, hardware, leather, and machinery. The general destruction of property, railways, mines, etc., during the late prolonged war will cause railway plant, building materials, bridges, etc., to enter largely into the imports for years to come.

The ports controlling most of the trade are Cape Town, Port Elizabeth, East London (Cape Colony), and Durban (Natal), and Lorenzo Marques (in Portuguese territory)—an outlet for the Transvaal Colony.

**THE EAST AFRICAN TRADE** is carried on either through the Suez Canal or by the Cape. Ivory and rubber are the chief products, together with a growing trade in coffee, tea, cotton, and tobacco. Zanzibar and Mombasa are the chief ports concerned. Aden is also an important distributing centre for these regions. The chief requirements of the natives are clothing and miscellaneous metal manufactures.



**V. Commercial Relations with America.**—The following are the chief subdivisions of our American commerce :—

1. British North America and the United States.
2. Central America and West Indies.
3. South America.

**THE NORTH AMERICAN TRADE.**—A reference to the import and export tables on pages 122, 123, will show the importance of British trade with Canada and the United States. Our food supply depends very largely upon these countries, and they take a large share of our manufactures. From Canada (Montreal, Quebec, and St. John) we draw vast supplies of corn and flour, wood and wood products, live animals, meat, and dairy produce, sending in return textiles, clothing, earthenware, machinery, and iron manufactures. The United States (New York, Boston, Philadelphia, Baltimore, New Orleans, etc.) supply us with immense quantities of raw cotton, wheat, animals and meat, leather, tobacco, petroleum, and timber ; her surplus manufactures (iron, steel, machinery, boots and shoes) find a market in the United Kingdom. In comparison we send them little, owing to their prohibitive tariffs and the remarkable energy of the people in meeting their own wants. On the other hand, Canada offers special terms to the mother country over some of her commercial competitors.

**THE CENTRAL AMERICAN TRADE.**—Cattle and silver (Mexico), coffee, sugar, tobacco, and dyewoods (Honduras, Guatemala, Costa Rica), are the chief articles of export to the United Kingdom. The West India Islands send tobacco, cigars, rum, cacao, and tropical fruits. With the exception perhaps of woollens, all our goods are in demand. A ship canal across the isthmus of Central America, connecting the Atlantic and Pacific Oceans, would be a valuable addition to the world's commercial facilities, and would bring the Pacific and the Far East into closer touch with the West.

**THE SOUTH AMERICAN TRADE.**—From the north coast and Brazil come sugar, cacao, rubber, coffee, cotton, mahogany and other ornamental woods ; the Plate River region contributes wheat, maize, animals, and meat. Chili and the eastern coast generally have a surplus of wheat, wool, ores, nitrates, and guano, most of which reaches the United Kingdom *viâ* Cape Horn.

The **Atlantic Ocean** is marked by a network of regular steamer tracks, along which vessels travel backwards and forwards with the greatest regularity. It is by far the busiest ocean in the world, and more ships cross it than on all the other oceans put together.



The traffic between Canada and the United States and the British Isles is particularly heavy, and so many vessels are engaged that, to diminish the risk of collision, those going westward follow a certain defined track known as an *ocean lane*; those passing eastward follow a track farther to the south.

The **Atlantic Trade** is of such proportions as to be almost beyond computation. The dealings of the United Kingdom with the United States and Canada alone amount to about £205,000,000 per annum. There is consequently little wonder that the Americans chafed under the preponderating tonnage of British shipping, in which a large percentage of their own ocean trade was carried.

In 1901 the Leyland Line, an old-established British company, possessing 46 steamers, with a tonnage approaching 300,000, passed into the hands of American capitalists. This was followed by a huge combine which included :—

Line.	Steamers.	Tonnage.
The American .....	25	184,000
Atlantic Transport.....	12	78,000
The Dominion .....	8	73,000
Leyland.....	46	293,000
White Star.....	26	250,000

Though American capital has entered largely into the arrangements, there is little reason to look upon the matter other than as an amicable partnership between two great nations. This should prove far more satisfactory than a disastrous competition, which would have resulted had American capitalists built a fleet of steamers to sail under the American flag, and wholly owned by Americans. The community of interest thus created may become a tie even more abiding than the merely sentimental ones of race and common speech.

## PART III.

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### CHAPTER X.

#### GREATER BRITAIN.

THE British Empire is of vast extent, covering an area of over 15 million square miles, and occupying nearly one-seventh of all the land surface of the earth. In every quarter of the globe, in all latitudes and longitudes, are British possessions, which provide outlets for our surplus population, and, at the same time, assist in the promotion of our commerce. Vast areas with physical features of great diversity, with climates varying from arctic severity to torrid heat, inhabited by peoples of every race, tongue, and colour, furnish productions of infinite variety.

Our possessions are administered by the British Government, but are not all controlled in exactly the same manner, each having a constitution best suited to its circumstances. Some are practically self-governing—as Canada, Newfoundland, Australia, and Cape Colony. Each of these has its own parliament, with a cabinet and officials similar to those in the mother country. Great Britain in these cases only appoints a governor, who is the representative of the British Government in the colony.

Other possessions—as Gibraltar, Ceylon, and Jamaica—are called Crown Colonies. They are practically governed solely by public officers appointed by and responsible only to the British Government.

In colonies where the native population is not capable of selecting a representative assembly, the governor nominates some of the leading inhabitants to form a legislative or advisory body.

The government of India differs very considerably from any

of the foregoing. It is under the control of the Council and Secretary of State for India; the provinces are ruled by governors or commissioners, who are responsible to the viceroy, who in turn is appointed by the Crown.

All the chief colonies are represented in London by agents-general, who act as ambassadors to the Home Government. They are in close touch with the Colonial Office and the Colonial Secretary, and by frequent consultation concert measures com-



RELATIVE EXTENT OF THE VARIOUS CONSTITUENT PARTS OF THE EMPIRE.

mercial, legal, and political for the order and well-being of the colonies generally.

The possession of vast territories does not necessarily mean that the United Kingdom monopolizes their trade. It is sometimes asserted that "trade follows the flag," but the statement is not borne out by facts, as is shown by the following figures, bearing on the respective values of our foreign and colonial trade:—

Period.	Our Trade with Foreign Countries.	Our Trade with British Possessions.
1855-59.....	73·4	26·6
1890-94.....	73·4	26·6
1894-99.....	75·5	24·5

Taking into account the remarkable colonial expansion in the last half-century, the figures are by no means reassuring.

In 1884 we sent Australasia goods to the value of £11, 12s. per head of her population, but in 1899 only to the value of £5, 4s. per head. In 1899 Canada took less of our exports by nearly £1,000,000 than she did in 1892. On the other hand, we took 55 per cent. of Canada's exports in 1892, and 62 per cent. in 1899. In other parts of the empire the import and export tables often tell a similar story.

The markets of the world are open to our colonies. Only by the excellence of her productions, at prices comparing favourably with those of the foreigner, can the mother country hope to retain their custom. Our kin across the sea will shed their blood in England's quarrels, but they will not buy her goods to their own commercial disadvantage, for trade follows the price-list rather than the flag.

**A British Customs Union.**—Preferential tariffs are favourable terms granted by one country to the imports of another. The need for a British Imperial Zollverein, or Customs Union, is becoming increasingly felt. The chief principle contended for is that in commercial matters the various portions of the empire should extend to each other more favourable terms than they will allow to foreigners. It would really tend towards Free Trade within the empire, whilst adopting Protectionist measures towards foreign countries. The adoption of a preferential tariff by Canada has already had remarkable results. In 1873 Canadian imports into Great Britain amounted to 68,000,000 dollars; by 1897 the amount had fallen to 29,000,000 dollars. Then came the introduction of preferential treatment (page 180), and after three years of the system the Canadian imports into Great Britain reached 43,000,000 dollars. Although the period covered is a short one, it would appear that results are at least justifying the experiment. There is, however, always a danger under a preferential system that the nations excluded from the preference may adopt measures inimical to the trade of the countries which allow the concessions. It would be a disastrous policy to endanger our foreign commerce for the sake of the relatively small colonial trade. Though it is, perhaps, impossible to reconcile all the conflicting interests, there is no reason why the mother country should not at least come to a closer understanding with the colonies.



## CHAPTER XI.

### BRITISH COLONIES AND DEPENDENCIES IN ASIA.

#### THE INDIAN EMPIRE.

BRITISH INDIA covers an area of  $1\frac{1}{2}$  million square miles, and has a population of 290 millions. It occupies a peninsula in the south of Asia, washed by the Indian Ocean and the Bay of Bengal—highways to Europe and the East respectively. On the north-west it comes in contact with Afghanistan, leading to Central Asia; beyond the Himalaya Mountains lies Tibet; and on the east lie Siam and China. The country is thus well situated for trade—a frontier trade with neighbouring territories, and a sea-borne trade almost without limit as to destination.

#### Physical Features.

One vast plain and an immense table-land, bounded chiefly by three mountain systems, generally describes the surface. The **Plain of Northern India**, drained by the gigantic rivers Indus and Ganges, stretches from Afghanistan to the Bay of Bengal; and the **Deccan**, a triangular plateau, occupies the greater part of the peninsula proper. The **Ganges**, 1,500 miles long, with a basin of 500,000 square miles, is the chief river. It is navigable from the time it enters the great plain at Hurdwar. Periodic inundations deposit fertile mud over the surrounding country, and irrigating canals are fed by its waters at all available points. It enters the sea by numerous mouths, the chief of which, the Hoogly, can be ascended by ships as far as Calcutta.

The **Indus** is navigable at Attock, nearly a thousand miles from the sea, but its mouth is dangerous to shipping. The remaining rivers generally are of little commercial importance, frequently running in deep channels far below the level of the surrounding country.

## Climate.

With so extensive and varied a surface, the climate naturally varies in different parts. Much of the country lies within the torrid zone, and the remainder within the warmest part of the north temperate. Generally, the climate is marked by intense heat. There are three seasons—**cool** (October to March), **hot** (March to June), and **rainy** (June to October). The seasons mainly depend upon the monsoons, winds steadily blowing in one direction for months at a time. The south-west monsoon blows from April to about September, and the north-east monsoon from October to April; the changes of the monsoons are usually marked by terrific storms. The rainfall is heavy, notwithstanding the comparatively few rainy days per annum. Bombay and Calcutta are quite three times rainier than London (24 inches), and in Assam it is said to sometimes reach 600 inches. The east coast is much hotter than the west.

## Agriculture.

Quite two-thirds of the vast population are engaged in agricultural pursuits. It is this almost absolute dependence upon the soil that causes such terrible famines to follow a failure of the crops. Over 15 millions of people died by famine between 1860 and 1900.

The Government has spent quite £30,000,000 on irrigation works alone, carrying fertility to over 12,000,000 acres; which is not only a valuable preventive of famine, but returns over six per cent. on the capital expended.

The great food crops are—

	1900.	Acreage.
Rice .....	73	millions.
Other food grains—millet, etc. ....	75	„
Wheat .....	16	„
Oil seeds .....	10	„
Sugar-cane .....	3	„
Tea .....	$\frac{1}{2}$	„

*Rice* forms the food of millions of the people, but leaves a large margin for exportation, together with wheat to about half the value. *Millet* is the grain that serves largely for home consumption.

The *tea* and *coffee* are excellent. The valleys of Assam grow enormous quantities of tea, while the cultivation of coffee is con-

fined almost entirely to the southern portion of the peninsula, especially on the slopes of the Nilgiri Hills.

*Sugar* is very general, but not sufficient for home consumption.

Of **industrial plants**, *cotton* (9,000,000 acres) is the most important. It is cultivated chiefly in the central and north-west regions.

No other country can surpass India in the quality of its indigo, jute, and opium.

*Indigo* is decreasing in importance, owing to the rise of chemical and aniline dyes, but is still an important crop in the north.

*Jute*, ranking next to cotton in order of value, occupies the rich plains north of Calcutta, which is the chief centre for collection and export.

The poppy, grown for the production of *opium*, is severely restricted by Government to certain districts in the Ganges valley and Central India. The preparation of opium is confined to Patna and Ghazipur. The drug, which pays a heavy duty, is chiefly exported to China and the Straits Settlements.

Other important crops are *flax*, *hemp*, *tobacco*, *cinchona*, etc.

The **forests** contain *teak*, *sal*, *palm*, and *bamboo*. Timber-cutting is regulated by a Government department, which has about 100,000 square miles of forest under its control.

### Minerals.

These are not generally abundant, and, except coal and salt, are little worked. There are extensive beds of *coal* between the Nerbudda and Assam, but it is of poor quality. With an output of 6 million tons, India ranks tenth; there are some 286 collieries, employing about 60,000 men. *Diamonds* and *gold* are found in scattered districts, but the *rubies* of Burma are unsurpassed. *Tin* is a growing mining industry in Burma, where the yield of *petroleum* is also very considerable.

*Salt*, which is a Government monopoly, is obtained largely by evaporation round the coast, from the salt cliffs of the Punjab, and by importation from England.

### Manufactures.

The native manufactures are generally unimportant, although in the weaving of shawls and carpets, and in metal work, skill



and delicacy are exhibited, especially considering the rude tools employed.

The **cotton manufacture** has developed remarkably during the last twenty-five years. In 1900 there were 190 cotton-mills at work, which produced over 500,000 lbs. of yarn, and nearly as much of woven goods. The export of cotton yarns and cloth to the value of 7 million pounds, bears out the fear that the coarse numbers of Bombay will in time oust Lancashire from the markets of India and neighbouring territories. In 1888-89 India possessed 2,670,000 spindles, which consumed 711,000 bales of cotton; in 1900 there were 4,930,000 spindles, consuming about  $1\frac{1}{2}$  million bales.



## Internal Communications.

**Railways.**—The first Indian railway was not opened until after 1850, and already (1900) there are nearly 25,000 miles of line open, much of which is owned or controlled by Government. They represent a capital value of 190 millions, on which 178 million passengers and 43 million tons goods traffic earned 5 per cent. (1900).

The chief railways will be best viewed from Calcutta, Bombay, and Madras, the first of which is the great railway centre of Northern India.

1. From Calcutta a line practically follows the course of the Ganges *viâ* Patna, Allahabad, Delhi, and Umballa to Lahore. From this town the line proceeds to Peshawar, on the north-west frontier, *viâ* Attock; or south-west to Karachi *viâ* Mooltan and Shikapur, from which last there is a branch across Baluchistan to Chaman, the advanced outpost of the Indian railways.

2. From Bombay there are two lines to Calcutta—the northern one, *viâ* the Nerbudda valley to Allahabad, where it joins the main line described above; and the southern one, proceeding *viâ* Nagpur. Another line runs north to Surat, Baroda, and Jaipur to Agra and Delhi, where it also connects with the north-west system.

3. From Madras there are two important lines—(1) to Bombay across the Deccan *viâ* Guntakal and Poona, throwing a branch off to Haidarabad, the capital of the Nizam's dominions; (2) to Goa (in Portuguese India) *viâ* Bangalore, with a branch to Calicut. From Goa is a west coast route to Bombay.

**Canals.**—There are over 14,000 miles of canals, most of which are primarily for irrigation purposes. The main channel of the *Ganges Canal* is 440 miles long, which with its 2,614 miles of lesser channels supplies water to over three-quarters of a million acres. The *Sirhind Canal*, in the Punjab, has a length of 540 miles, with 4,500 miles of smaller channels, which irrigate over 2 million acres.

The length of **telegraph** lines on March 31, 1900, was 53,000 miles.

## Commerce.

India, with its varied productions and its enormous population, has an extensive commerce, and her external trade alone under British rule has quadrupled during the last thirty years.

Particulars of trade for three years :—

	1899. Million £.	1900. Million £.	1901. Million £.
Imports .....	60	64	67
Exports .....	80	78	88
Total .....	<u>140</u>	<u>142</u>	<u>155</u>

The chief articles of foreign trade during 1901 were :—

IMPORTS.		EXPORTS.	
	Million £.		Million £.
Cotton manufactures .....	20	Oil seeds .....	11
Metals, hardware, cutlery...	6	Cotton (raw) .....	10
Sugar .....	4	Rice .....	9
Oils .....	3	Jute .....	8
Machinery .....	2	Cotton yarns and cloth .....	7
Railway plant .....	1	Opium .....	6
Woollen goods .....	1	Tea .....	5
		Hides and skins .....	4
		Wheat .....	2½
		Indigo .....	1

The following were the chief countries trading with India in 1900, the amount of trade (merchandise only) being given in millions of pounds :—

United Kingdom .....	60	Straits Settlements .....	5
China and Hong-Kong .....	10	France .....	5
Germany .....	6	Japan .....	4
United States .....	5		

### The Tea Trade.

An astonishing feature of the Indian foreign trade is the remarkable increase in the export of tea, which is well shown by a comparison of the years 1890 and 1899.

#### EXPORTS OF TEA (India and Ceylon).

	1890. Lbs.	1899. Lbs.
To foreign countries .....	14,000,000	68,000,000
To United Kingdom .....	136,000,000	243,000,000

In ten years the crops have been almost doubled, with the result that British grown tea has almost entirely displaced that of China, in the United Kingdom at least.

Indian traffic trends chiefly to the coast, and hitherto there has been but little trade with regions beyond the Himalayas. There is now a railway from Calcutta to Sadiya on the borders of Tibet, and another from Rangoon *viâ* Mandalay to Myitkyina

and Kunlong on the borders of China. By means of the former a trade is growing with exclusive Tibet, and the latter taps the rich Yang-tse valley.

On the north-west the Kyber and Bolan passes are the main channels of the Afghanistan and Persian trade.

Concessions to Germany for the construction of a railway across Asia Minor, from the Dardanelles to the head of the Persian Gulf, have suggested a line from Cairo to India *via* Suez and Basra. Russian railways in Central Asia have reached Kuskh,



BRIDGE OVER THE HOOGLY, AT CALCUTTA.

on the borders of Afghanistan. The construction of a line from this point to Chaman would give India access to the markets of Central Asia, and even Eastern Europe.

### Ports.

In 1900 the total number of vessels entered and cleared at Indian ports was 8,302, with a tonnage of 8,269,000. Of these 83 per cent. sailed under the British flag, and about 60 per cent. were to or from the United Kingdom. Calcutta and Bombay

control quite three-fourths of the foreign trade, and Madras and Rangoon very nearly the remaining quarter.

**Calcutta**, the metropolis of the Indian Empire, and the commercial capital of Asia, stands on the Hoogly, a stream of the Ganges delta eighty miles from its mouth. With its population of about a million, it is the second city in the British Empire. Its excellent situation allows it to collect by rail and river the varied produce of the Ganges Plain, as well as the tea of Assam. Improved navigation works allow vessels of 5,000 tons to reach the city, although midway there is a shoal that necessitates great caution.

**Bombay**, the nearest Indian port to Europe, has the best harbour in Southern Asia, and is in a commanding position for commerce. Since the opening of the Suez Canal its volume of trade has surpassed that of Calcutta. There are about sixty square miles of harbour space available for shipping, together with excellent dock accommodation. It is the terminus of the mail line to India *via* Suez and Aden, and is also the terminus of the Great Indian Peninsular Railway, purchased by the Government in 1900. The American War of 1861-65 caused Bombay to become one of the chief cotton markets of the world, and it is still second only to New Orleans. Raw cotton is the staple export, but the city controls quite two-thirds of the machine spinning and weaving industries of India.

**Madras** extends for eight miles along a surf-beaten shore, so exposed that formerly passengers and goods were landed only by means of surf-boats. A capital harbour and piers now allow vessels to enter with comparative ease, except when the north-east monsoon is at the height of its fury.

**Rangoon**, on the delta of the Irawadi, is well situated for trade. The river is navigable to Bhamo, a distance of 700 miles; in addition to which there are railway connections to the Chinese frontier. Eighty per cent. of the trade of Burma enters and clears from the port which, in the Bay of Bengal, is second only to Calcutta.

## MINOR POSSESSIONS IN ASIA.

### Ceylon.

The island of Ceylon is a Crown colony, with an area of about 25,000 square miles, and a population of 3,000,000, of whom less than 7,000 are Europeans. The surface is very diversified; the



mountains are clothed with verdure to their summits, and the valleys are filled with luxuriant vegetation. The climate is hot but healthy, except in the low-lying portions.

The chief vegetable productions are *tea*, *cacao*, *rice*, *sugar*, *cinnamon*, *cinchona*, *cocoa-nuts*, *palms*, and *teak*. About 70 per cent. of the people are engaged in agriculture. Cocoa-nuts occupy the largest area, rice and tea being next in order. Coffee-planting was once a flourishing branch of industry. In 1879 the exports were 824,000 cwt.; in 1900 they had dwindled to 10,000 cwt. The cacao appears to have taken the place of coffee: in 1885 about 7,000 cwt. of cocoa beans were exported; in 1899, over 42,000 cwt.

The minerals are varied and abundant, and precious stones are also found. *Plumbago* is the most important mineral; there are over 1,500 plumbago mines and 400 gem quarries. The *pearl fishery* in the Gulf of Manaar is productive only at long intervals.

In 1900 there were 290 miles of railway opened, and almost the same length projected or under construction; telegraphs, 1,160 miles.

#### TRADE, 1900.

Imports.....	£8,155,000.	Exports.....	£6,330,000.
--------------	-------------	--------------	-------------

The United Kingdom sent cottons and clothing, coal, machinery, and metals, to the value of £1,833,000, taking in return tea, cocoa, oil and oil nuts, plumbago, and coffee to the value of £5,473,000. Tea alone amounted to £4,096,000; in 1878 it reached only £120.

Colombo, the capital, is one of the chief calling ports and coal-stations in the world.

### Straits Settlements.

These territories consist of the southern portion of the Malay Peninsula, most of which is at least under British protection. The chief settlements are Penang, Wellesley Province, Malacca, and Singapore. Area, about 1,500 square miles; population, 1,500,000. The total area under British protection is not less than 40,000 square miles.

Agriculture and the mining of tin are the chief occupations of the people. Much of the labour in the plantations is performed by Chinese immigrants, 200,000 of whom entered the territories in 1900.

## TRADE, 1900.

Imports.....£31,408,000.      Exports.....£26,261,000.

The trade with the United Kingdom amounted to £9,329,000. Tin was by far the chief article of export—gums, spices, tapioca, copra, and gambier ranking next in importance; of the imports the largest are rice, cotton goods, and opium.

**Singapore** is the emporium for the whole colony, and for many of the adjacent islands. Three-quarters of the total trade of the colony enters and clears from this port. It is the chief port on the route from India to China, and the centre of the eastern telegraph system. Much of the commerce, banking, etc., is controlled by the Chinese inhabitants.

**Hong-Kong**

is an island at the mouth of the Canton River, backed by Kowloon, a small strip of mainland. The whole area is a little less than thirty square miles. In order to strengthen the defences of the colony, the British Government in 1899 leased from China 400 square miles of additional territory, including Mirs Bay, the port of Kanlung, and numerous villages.

Hong-Kong is a unique possession in that it produces nothing for home consumption or export. It is really a great market for silk and tea, the centre of the opium trade, and a huge warehouse for distributing the varied manufactured products of the United Kingdom. The trade of the colony (1900) amounted to £14,000,000, chiefly with Great Britain, India, and Australia, the first-named taking about half the total amount. The trade with the open ports of China is under the superintendence of the governor of the island.

**Victoria**, the capital, is an important British naval station. Between the city and the mainland is a fine natural harbour ten square miles in area.

**Aden**

is an important coaling and fortified naval station on the Overland Route at the entrance to the Red Sea. It is an important distributing centre for British goods, and a collecting station for coffee, gums, tobacco, and ostrich feathers from Arabia and East Africa.

## British East Indies.

	Area (sq. miles).	Population (1900).	Imports (1900).	Exports (1900).
British North Borneo....	31,000	175,000	£318,000	£334,000
Sarawak.....	41,000	350,000	384,000	522,000
Labuan.....	30	5,800	175,000	104,000

Borneo is an island in the East Indies in which the British control over 70,000 square miles, together with the small island of Labuan. The territory has immense possibilities. All kinds of tropical produce can be grown, and there are rich deposits of coal and gold. Half the *sago* of the world is grown in Sarawak, and *coal* is already exported to Singapore for coaling vessels. Quicksilver, antimony, camphor, guttapercha, and rattans are also exported.



## CHAPTER XII.

### BRITISH POSSESSIONS IN AUSTRALASIA.

**Australasia** is the term generally applied to the island continent of Australia and the islands which lie near it, of which the largest are New Guinea, New Zealand, and Tasmania.

#### AUSTRALIA.

The Commonwealth of Australia, consisting of the federated colonies of New South Wales, Victoria, Queensland, South Australia, West Australia, and Tasmania, dates from January 1, 1901. New Zealand, on account of its distance, is not included. The following figures give a general idea of the relative importance of the federated states for the year 1900 :—

	Area (sq. miles).	Population.	Imports. (In million £ approximate.)	Exports.
New South Wales..	310,700	1,356,650	26	28
Victoria.....	87,884	1,163,400	18	19
Queensland.....	668,490	512,600	7	12
South Australia.....	903,690	370,700	7	9
West Australia.....	975,920	171,000	4	7
Tasmania.....	26,215	182,500	1 $\frac{3}{4}$	2 $\frac{1}{2}$

The continent has a length of 2,400 miles, breadth 1,900 miles, and a total area of nearly 3,000,000 square miles. In shape it is exceedingly compact, and its 9,000 miles of coast are marked by few indentations. The chief features of the surface are a vast desert table-land occupying a great portion of the centre, surrounded by a narrow fertile plain extending almost all round the coast; in the east, from north to south, there is a long chain of mountains (Dividing Range) separating the coast plains from the interior. On the whole, little more than the coast plains are yet suitable for settlement. Tasmania is a very fertile island.



In consequence of its great size, the climate of Australia varies very considerably : it is hot in the tropics, and elsewhere generally temperate. On the whole, it is remarkably dry and healthy. In the tropics the summer, from November to April, is marked by heavy rains ; in other parts the wet season is in winter, May to October. The rainfall is by no means regular, and droughts, where irrigation is impossible, cause great loss in the sheep-rearing industry.

Australia lacks water. It possesses remarkably few rivers, not one of which is really navigable. The *Murray* is over 2,200 miles long, but is a waterway of little commercial importance. In wet seasons it is navigable as far as Albury, where the river is crossed by the railway from Sydney to Melbourne ; but even then goods cannot reach the sea, for navigation ends at Morgan, eighty miles from the coast of South Australia. In dry seasons the rivers generally almost disappear.

### Agriculture.

Over 10,000,000 acres of land are under cultivation in New South Wales, Victoria, and South Australia ; in Queensland and West Australia the area is yet small, but is rapidly increasing. Among crops *wheat* occupies first place.

#### CHIEF WHEAT AREAS.

	Acres.	Bushels.
New South Wales.....	1,400,000	13,600,000
Victoria.....	2,166,000	15,238,000
South Australia.....	1,821,000	8,453,000
Tasmania.....	64,000	1,101,000

**Maize** is the chief crop in Queensland (nearly 2,000,000 bushels), and *sugar* is increasingly grown in New South Wales and Queensland.

**Vine** cultivation has met with great success, especially in Victoria, South Australia, and New South Wales, where wine is becoming an important product. In 1899 South Australia produced 1,000,000 gallons, and Victoria twice as much.

The cultivation of *fruit* for British markets is an important and growing source of profit : in New South Wales alone there are over 14,000 acres of orange plantations, yielding about 500,000 cases.

More important still is the great pastoral industry, to which



Drawing the Mallee Roots.



A Young Orchard.



Scooping an Irrigation Channel.



Fruit Drying.



Trees in Full Bearing.

many million acres of land are devoted, supplying large quantities of wool and meat for the world's markets. In the Commonwealth there are about 75,000,000 *sheep*—36,000,000 in New South Wales, 15,000,000 in Queensland, 12,000,000 in Victoria; and nearly 10,000,000 cattle, half of which are in Queensland. In 1891 New South Wales alone possessed 61,000,000 sheep, but a mixed farming system and increased attention to the cultivation of wheat are responsible for the reduction in numbers. In the rearing of sheep the production of wool is the first consideration, the population being too small to create a large meat demand. Considerable quantities of meat are exported.

There is scarcely any plant of economic value that will not thrive in some portion of the continent. In Queensland, tobacco, cotton, coffee, rice, and pineapples are cultivated, and there are several thousand acres of bananas. The cultivation of tea is an assured success. Agriculture is yet in its infancy. Irrigation is constantly adding to the area under cultivation. Not only are the rivers utilized to feed the irrigating channels, but hundreds of artesian bores increase the supply of water. In Queensland there are 500 bores, some of which yield 5,000,000 gallons per day. In times of drought the bores obviate the necessity of allowing stock to perish for lack of water.

### Mining.

Almost all the principal metals of value are found in Australia. *Gold* was discovered in 1851, and by the close of the century the total yield was estimated at £400,000,000 sterling, about five-eighths of which was mined in Victoria.

#### Gold Production:—

	1898. Oz.	1901. Oz.
West Australia.....	1,643,000	1,881,000
Queensland.....	947,000	816,000
Victoria.....	840,000	790,000
New South Wales.....	509,000	279,000
Tasmania.....	76,000	79,000

It is estimated that there are 1,200 miles of gold reefs in West Australia. The Coolgardie field became famous in 1895. In 1890 the colony exported gold to the value of £86,000, in 1897 £2,564,000, and in 1899 nearly £5,500,000 sterling.

*Silver* is of more recent discovery, and has yet yielded but about £30,000,000. The mines of New South Wales are the most important: Broken Hill mine has yielded over 20,000,000 oz.



In 1900 New South Wales produced 774,000 oz., valued at £90,000,\* in addition to which there were 444,000 tons of silver-lead ore and metal, valued at over £2,000,000; Queensland, 112,000 oz.

**Copper** exists in all parts of the Commonwealth, but is mined chiefly in South Australia and Tasmania. In 1900 the ore raised in South Australia was worth £400,000, and New South Wales £425,000; in the same year Tasmania raised silver and copper to the value of over £1,500,000.

**Tin** is found in large quantities in New South Wales, Queensland, and especially Tasmania. £7,000,000 worth has already been mined, and the average export exceeds £200,000.

**Iron** is widely distributed. In New South Wales magnetite, the richest of all ores, is found in abundance at Wallerawang, and other species are plentiful.

**Coal** of good quality is abundant, but at present little developed, except in New South Wales, where one hundred mines in 1900 yielded over five and a half million tons (£1,670,000). The coal is exported to the Straits Settlements and the east coast of Asia, where it is likely in the near future to keenly compete with the coal of South Wales, especially for naval and shipping purposes. Queensland has an immense coal area, and West Australia, Victoria, and Tasmania possess very large deposits.

**Railways.**—Considering the small population of Australia, it is better served with railways than any other country in the world. There are 13,000 miles of line open for traffic, owned almost entirely by the Government.

1. The four capital cities—Sydney, Brisbane, Melbourne, and Adelaide—are in communication with each other. From Sydney there is a line north to Brisbane, Maryborough, and Rockhampton; and another runs south *via* Bathurst, Goulburn, and Albury to Melbourne, and thence to Adelaide. At Goulburn a line is under construction, running almost due west to South Australia. The main coast lines have numerous branches running west into the interior.

2. The lines of West Australia run from Perth to Geraldton, near Murchison River, and thence inland to Nannine, beyond Lake Austin. Another line runs to Albany, with a branch to Coolgardie.

3. A trans-continental line from Adelaide to Palmerston, following the track of the overland telegraph to Port Darwin, is under construction. It already extends as far north as Oodnadetta,





near Lake Eyre; from Palmerston the line is completed to Pine Creek (1900).

Another project is to connect Perth with the eastern system, by continuing the line from Coolgardie along the shores of the Great Australian Bight.

### Commerce.

	Imports.	Exports.	Total Trade.
1898	£60,306,518	£67,415,120	£127,721,638
1899	63,570,400	77,066,267	140,636,667
1900	68,985,277	72,151,541	141,136,818

### ANALYSIS OF IMPORTS AND EXPORTS, 1900 (in million pounds approximate).

	Imports.	Exports.	Total Trade.
New South Wales.....	28	28	56
Victoria .....	18	18	36
Queensland.....	7	10	17
South Australia .....	8	8	16
West Australia. ....	6	7	13
Tasmania.....	2	2½	4½

### TRADE WITH THE UNITED KINGDOM, 1900.

	Value.
New South Wales.....	£18,000,000
Victoria .....	13,000,000
Queensland.....	6,000,000
South Australia.....	5,000,000
West Australia.....	5,000,000
Tasmania .....	1,300,000

Among the articles exported to the United Kingdom are:—

*Wool* from New South Wales (£5,500,000), Victoria (£3,000,000), Queensland (£2,000,000), South Australia (nearly £1,000,000).

*Meat* (fresh and preserved) from New South Wales (£750,000); mutton from Victoria (£200,000); meat (chiefly beef), Queensland (£1,500,000).

*Butter*, Victoria (£1,300,000); New South Wales (£390,000).

*Wheat and flour*, to the value of about £1,000,000, chiefly from Victoria and South Australia.

*Tallow*, valued at about £1,000,000, more than half of which is from New South Wales.

Other items include hides, skins, and furs, copper, leather, wood, fruit, metal ores, etc.

**Shipping.**—The shipping trade of Australia is chiefly in the hands of the British. Notwithstanding the efforts of foreign countries by subsidized lines of magnificent steamers to obtain a larger share of Australasian trade, Great Britain and her dependencies still control 85 per cent. of the shipping trade—a decrease of only about 8 per cent. in nearly twenty years.

The chief ports in order of trade value are Sydney, Melbourne, Brisbane, Adelaide, Fremantle, and Hobart.

Melbourne has the greatest tonnage, and in this respect Albany and Newcastle both exceed Brisbane.

In aggregate tonnage Melbourne is exceeded only by London, Cardiff, Liverpool, and Newcastle. Hull comes next, and but just exceeds Sydney, which in turn is higher than Glasgow and other British ports.

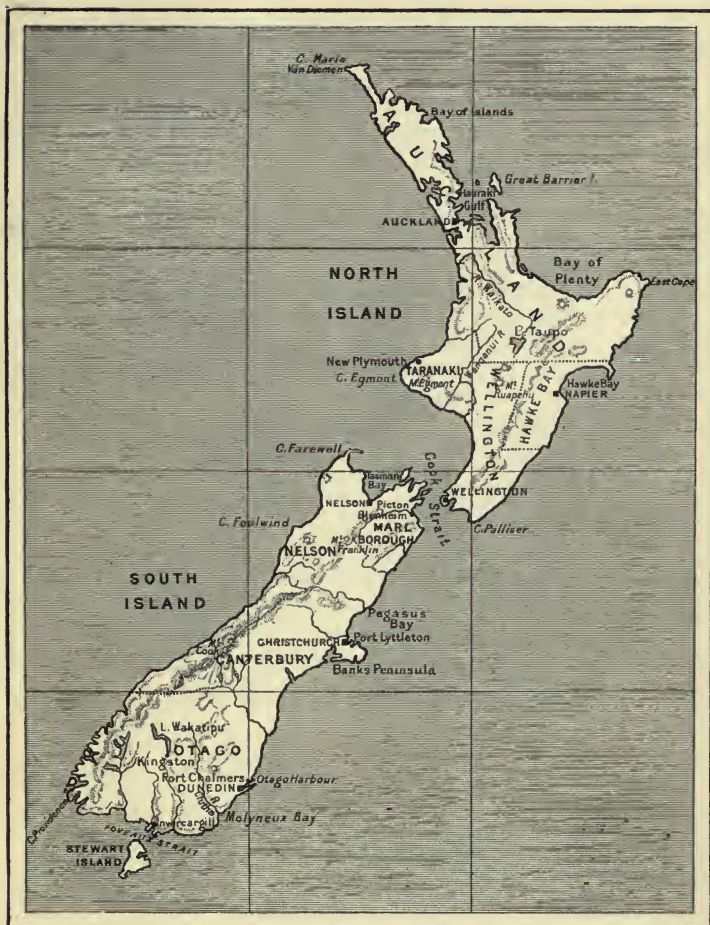
The chief cities of Australia are imposing in appearance; and in lighting, locomotion, sanitation, and all modern appliances of civilization, are, on the whole, ahead of many important cities in the United Kingdom.

## NEW ZEALAND.

**New Zealand** consists of a group of islands about twelve hundred miles east of New South Wales. North Island and South Island are a thousand miles in length, and themselves have an area of over a hundred thousand square miles. The country is mountainous, especially South Island. Rivers and lakes are numerous, but the streams are useless for navigation. The Waikato River is navigable by small vessels for fifty miles. The climate very much resembles that of England, except that the weather is less changeable. North Island is seven degrees and South Island four degrees warmer than London. Every fruit, flower, and vegetable that is grown in Great Britain flourishes here.

Two-thirds of the surface is suitable for *agriculture* and *grazing*, and there are 20,000,000 acres of forest. Over 34,000,000 acres of land were occupied in 1900, of which nearly one-third was under crop. Every year about 600,000 acres are brought under cultivation. In 1900 the yield of wheat was  $8\frac{1}{2}$  million bushels, the average being 31 bushels per acre. There are over a million cattle and nearly twenty times as many sheep in the colony.





(Each square is 250 miles.)

The principal products of the mines in 1900 were:—

		Value.
Gold.....	373,600 ounces.....	£1,440,000.
Silver.....	326,000 ounces.....	39,000.
Kauri gum.....	10,000 tons.....	622,000.
Coal.....	1,090,000 tons.....	546,000.

The total yield of gold to the end of 1900 was nearly £58,000,000.



**Railways.**—The 2,270 miles of line are almost all the property of the Government.

The chief lines are (in North Island) :—

1. From Auckland to Mōkan, with a branch to Ohinemutu.
2. From New Plymouth, following the coast, to Wellington, thence proceeding north-east to Napier, on Hawke Bay.

In South Island :—

1. A long coast line connecting Christchurch, Dunedin, and Invercargill, with numerous branches into the pastoral districts of the interior.

2. From Christchurch, across the Southern Alps, to Greymouth, on the west coast, and thence across the coal-field of the province to Nelson, on the shores of Tasman Bay.

### Commerce (1900).

Imports.  
£8,739,000.

Exports.  
£11,938,000.

The rapid increase in the value of the export trade is very marked :—

	Wool.	Frozen Meat.	Kauri Gum.	Butter.	Cheese.
1887	88,000,000 lbs.	402,000 cwt.	6,700 tons	17,000 cwt.	23,000 cwt.
1900	141,000,000 "	1,845,000 "	10,100 "	173,000 "	102,000 "

In 1900 the export of frozen meat consisted of—

Mutton.....	104 million lbs.
Lamb.....	52 million lbs.
Beef.....	36 million lbs.

About three-fourths of the entire trade is with Great Britain. Among the exports to the mother country were wool (£4,813,000), mutton (£2,657,000), butter and cheese (£993,000), kauri gum (£340,000). The imports from the United Kingdom are chiefly textiles, apparel, iron and steel, and machinery.

The total population of the colony is less than a million : over 95 per cent. are British-born subjects. The Maoris number over 40,000, and, unlike most native races, are increasing in numbers under civilization. *Wellington* is the capital, and an important port ; but *Auckland* is larger, and almost twice as many vessels enter and clear from its harbour. Other important ports are Lyttelton, Dunedin, and Bluff Harbour (Invercargill).

## MINOR POSSESSIONS IN AUSTRALASIA.

	Area (sq. miles).	Population.	Imports (1900).	Exports (1900).
British New Guinea. ....	91,000	350,000	£72,000	£56,000
Fiji.....	7,740	122,000	349,000	619,000

**British New Guinea** consists of the south-eastern part of the island, together with several smaller adjacent islands. The productions are gold, timber, tobacco, sago, sugar, copra, etc. The climate is, however, far from healthy for Europeans, and the colony has made little progress since it was annexed, in 1884.

**Fiji Islands** are in the South Pacific, one thousand miles from New Zealand. The climate is delightful, and the soil is fertile. The bread-fruit, banana, and cocoa-nut are the chief productions. Sugar, fruits, copra, and cocoa-nut oil are the chief exports.

**The All-British Cable.**—The Fiji Islands will form one of the chief links in the suggested "All-British" cable. The total length would be about 7,500 miles, and the estimated cost from 1½ to 2 million pounds. It is proposed that Great Britain and Canada each pay five-eighteenths of the cost, and Australia and New Zealand the remainder. The matter has been under consideration for over twenty years, but there is now every prospect of the scheme being carried out.



# CHAPTER XIII.

## BRITISH POSSESSIONS IN AFRICA.

### WEST AFRICAN SETTLEMENTS.

	Area (sq. miles).	Population.	1900.	
			Imports.	Exports.
Gambia .....	69	15,000	£277,000	£281,000
Sierra Leone .....	15,000	127,000	558,000	362,000
Gold Coast .....	40,000	1,475,000	1,295,000	885,000
Lagos .....	1,230	85,000	966,000	915,000
Nigeria .....	500,000	25,000,000	1,200,000	1,166,000

ALL the coasts of these settlements are generally low and extremely unhealthy, and ill suited for the occupation of Europeans. The trading stations are situated on the coast; but British in-



(Each square is 500 miles.)

fluence is rapidly extending inland, especially in Ashanti and Nigeria.

The productions of these regions are very similar, and include gold, ivory, palm oil, gums, ostrich feathers, hides, rubber, etc. Rice, cotton, coffee, ginger, and cacao are cultivated; timber is abundant. The chief exports are palm oil, oil nuts, and rubber.

### SOUTH AFRICA.

With the conquest of the Boer republics, the whole of the southern portion of the continent south of the rivers Orange and Limpopo is under British sway; beyond, and extending to the southern shore of Lake Tanganyika, is another vast area. The following are the chief territories:—

	Area (sq. miles).	Population.	1899.	
			Imports.	Exports.
Cape Colony.....	277,000	2,265,000	£15,370,000	£23,247,000
Natal.....	29,200	902,000	6,718,000	1,885,000
Basutoland.....	10,290	250,000	85,000	133,000
Orange River Colony...	48,320	207,500	1,190,000	1,193,000
Transvaal Colony.....	119,200	1,094,000	13,563,000	10,936,000
Bechuanaland.....	386,000	200,000	—	—
Rhodesia.....	457,000	600,000	—	—
British Central Africa.	42,000	900,000	158,000	79,000

### Cape Colony

is the “halfway house” to India and Australia. Its coast-line is marked by but few indentations; Table Bay provides very insecure anchorage for ships, but there are good docks at Cape Town. The country ascends from the sea in three terraces, the edge of each being marked by parallel ranges of mountains. The climate, dry and sunny, is one of the finest in the world.

**Productions.**—The soil is not fertile, as quite two-thirds of the colony is badly watered, and the rainfall is very uneven. Except during the rainy season, the rivers are of little value. The chief products of the year 1898 were:—

	Bush.		Lbs.
Wheat.....	2,220,000	Wool.....	35,000,000
Oats.....	1,810,000	Mohair.....	6,707,000
Mealies.....	2,857,000	Ostrich feathers...	278,000

Fruit cultivation receives much attention, and the vineyards yielded about five million gallons of wine and a million gallons of brandy.



The *mineral* wealth is very great, but except in *gold* and *diamonds*, little progress has been made, owing to the difficulty of transport and the dearth of labour. The yield of diamonds, chiefly from the Kimberley mines, is about £4,000,000 per annum. The gold which figures among the exports is largely the product of the Transvaal. *Coal* and *iron* are fairly abundant, but are little worked; the *copper* mines of Little Namaqualand are productive.

**Commerce.**—About half the total trade is done with the United Kingdom.

	Imports. (In million pounds approx.)	Exports.	Total Trade.
1888-1892 (average).....	9	10	19
1899-1900 .....	19	23	42

The chief exports in the last-named year were :—

Gold.....	£14,000,000	} The United Kingdom took nearly the whole of the diamonds, wool, and feathers.
Diamonds.....	4,115,000	
Wool and hair.....	3,221,000	
Feathers.....	842,000	

The chief ports are Cape Town, Port Elizabeth, and East London.

## Natal

is well watered and fertile. The rivers are not navigable, but are useful for irrigation. The climate is agreeable and extremely healthy. Iron and coal abound, and the latter is being energetically worked. Agriculture and stock-raising are the chief occupations of the people, of whom 70,000 are Kaffirs. The coast region has a tropical climate, and sugar, tobacco, rice, coffee, indigo, and arrowroot succeed. In 1898 the yield of tea exceeded 1,000,000 lbs., and sugar amounted to 581,000 cwt. The tropical plantations are worked by 61,000 coolies and Chinese.

	Imports.	Exports (excluding gold).
1890.....	£4,417,000	£1,379,000
1898.....	5,323,000	1,246,000
1899.....	6,718,000	1,885,000

Wool, gold, coal, and sugar are the chief exports.

Great Britain takes about sixty per cent. of the exports, and supplies sixty-five per cent. of the imports.

**Durban** is the largest town and the chief seaport.

**Pietermaritzburg**, the capital, is fifty miles inland.



### Orange River Colony

is not well suited for agriculture, though a considerable quantity of grain is grown. The undulating plains provide splendid grazing facilities for 6,000,000 sheep, 1,000,000 goats, 1,000,000 cattle, and 1,500 ostriches.

Coal is abundant, and gold exists in paying quantities. In 1898, diamonds were mined to the value of 1½ million pounds.

Bloemfontein, the capital, is a town of only 4,000 inhabitants.

### Transvaal Colony

is well adapted for agriculture and stock-raising; immense numbers of sheep and cattle are reared, but at present the agricultural produce is not sufficient for the population, and much flour is imported. Tobacco and fruit grow well.

The *Witwatersrand* gold-fields have been remarkably and increasingly productive, as shown by the output at various periods.

1884.....	£10,000	1895.....	£8,569,000
1890.....	1,869,000	1897.....	11,476,260
1893.....	5,480,000	1898.....	16,044,000

*Coal* is found near the *Witwatersrand*, and over a million tons were mined in 1898.

Most of the trade of the late Boer republics passes through Natal.

**Pretoria** (12,000) is the capital, but **Johannesburg** (105,000) is the largest and chief commercial town.

### Rhodesia and British Central Africa.

Notwithstanding the latitude, the elevation of a great portion of these territories renders them habitable by white men. With the exception of the *Zambesi*, rivers are almost absent, but the rainfall is usually sufficient for agricultural purposes. Probably *gold* will first absorb the energies of the settlers, but *rubber* exists in large areas, and agriculture and stock-raising are possible almost everywhere. Had it not been for the misfortunes of South Africa generally, in the closing years of last century, the territories would have made far more progress. The transcontinental telegraph line passes through from one end to the other, and the railway is progressing rapidly.

### Railways of South Africa.

There are about 5,000 miles of Government railways.

1. The Cape to Cairo line extends from Cape Town, *via* Kimberley, Vryburg, and Mafeking, to Buluwayo, the chief town of Matabeleland, which it reached in 1897, completing 1,360 miles. The line is already surveyed to the shores of Lake Tanganyika.

2. From Port Elizabeth and East London there are lines to the borders of Orange River Colony, where the line is continued to Bloemfontein, Johannesburg, and Pretoria, where it turns due east and extends to Komati Poort, on the borders of Portuguese territory, leading to Delagoa Bay.

3. From Durban there is a line *via* Ladysmith to Johannesburg.

4. From Salisbury, in Mashonaland (Rhodesia), there is a line to the coast, passing through Portuguese East Africa, and terminating at the port of Beira.





rubber, gums, copra, feathers, cattle, and sheep. The imports are mainly cottons, hardware, and small goods generally. The abolition of slavery, especially in Zanzibar, has been a troublesome process. The port of *Zanzibar* is the largest city on the East African coast. The figures above give but a small idea of its transshipment trade. *Mombasa*, the port of Uganda, is the terminus of the Uganda Railway.

### AFRICAN ISLANDS.

	Area (sq. miles).	Population.	1900.	
			Imports.	Exports.
Ascension .....	34	500	£132,000	£100,000
St. Helena.....	47	4,200	64,000	4,590
Mauritius.....	705	380,000	1,900,000	1,690,000
Seychelles.....	79	19,000	94,000	74,000

### Ascension Island

is on the Cape route, 3,780 miles from England. It is a coaling-station and naval sanatorium, under the government of the Admiralty. The shores are visited by turtles in thousands, and by sea-birds in myriads. The native plants include the tomato, pepper, and castor-oil plant. *Georgetown*, the capital, is strongly fortified.

### St. Helena

is 690 miles south of Ascension Island. It was formerly an important station on the route to India and the East. The opening of the Suez Canal left only its strategical importance as a coaling and naval station. The island is of great historic importance, as the place of exile of Napoleon Bonaparte, who died there in 1821; Boer prisoners of war were also detained there during the later stages of the South African War. Both St. Helena and Ascension are in telegraphic communication with the Cape and Sierra Leone.

### Mauritius

lies in the Indian Ocean, 500 miles west of Madagascar. The population is very mixed, and includes 150,000 Hindoo coolies on the sugar plantations. Sugar is the staple product, even to the exclusion of necessities, which are obtained from South Africa, India, and Australia. There is cable communication with Zanzibar.

The *Seychelles*, thirty small islands, form a dependency of Mauritius. Dates and cocoa-nuts are the chief exports.

## CHAPTER XIV.

### BRITISH POSSESSIONS IN AMERICA.

#### BRITISH NORTH AMERICA.

CANADA includes the whole of British North America except Newfoundland and Labrador. In area it is 3,654,000 square miles, or nearly equal to Europe. The population is nearly five and a half millions. The northern coast lies within the Arctic Circle, and is of no commercial importance; on the east it fronts the busiest ocean highway in the world; and on the west the Pacific gives access to the markets of Asia and Australasia.

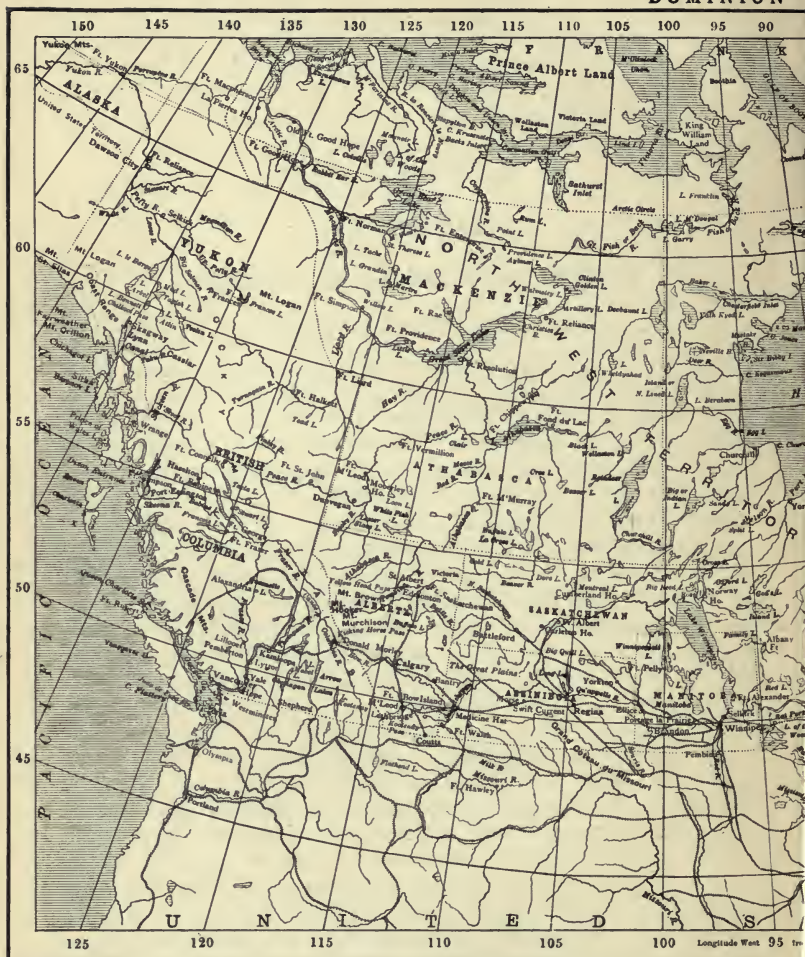
The exact boundary between Canada and Alaska has long been a matter of dispute. A Russo-English treaty of 1825 fixed the boundary by a line parallel to the coast and ten leagues therefrom. The coast is very deeply indented, and the United States, to whom Alaska now belongs, claims the boundary to be measured from the head of the deepest opening. Canada claims it to be measured from the main coast-line.

#### Physical Features.

The country consists of a vast plain from the Atlantic Ocean to the Arctic Ocean in the north, and the Rocky Mountains in the west, between which and the Pacific is the table-land of British Columbia.

In the centre there is a bewildering network of rivers and lakes, draining chiefly to the north by the river Mackenzie, which is ice-locked for a great portion of the year. In the south is a magnificent lake system, giving rise to the river St. Lawrence, a splendid waterway to the Atlantic Ocean.

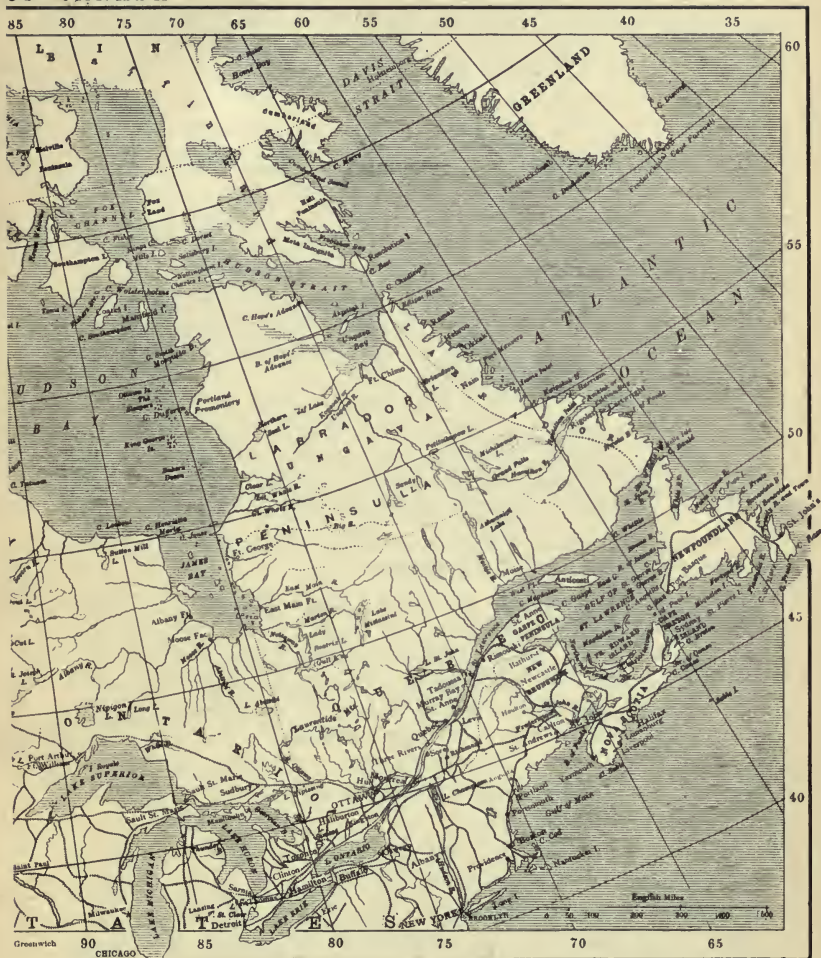
The great lakes are—Superior (32,000 square miles), Huron (24,000), Erie (10,000), and Ontario (6,300). From this last issues the St. Lawrence, 2,300 miles in length from the head of



Lake Superior to the ocean. Throughout its entire length it is navigable, falls and rapids being avoided by an excellent system of canals. The chief cities are on its banks, and four-fifths of the population dwells in its valley.



## OF CANADA



## Climate.

The climate throughout all the vast area is healthy, but marked by extremes. The summer heat rises to  $90^{\circ}$  in the shade,



or nearly as hot as India ; the winters are very severe, but even the coldest weather is dry and bracing. On the Pacific slope the winters are not nearly so long or trying.

### Agriculture

is the principal industry of the country. About one-third of the occupied land is under crops. The **wheat**-growing capacity of the country is practically unlimited, and it is estimated that the province of Manitoba alone could produce 500,000,000 bushels. Of other cereals, **maize** is a heavy crop, and **tobacco** is increasing in importance. Fruit cultivation, especially the **vine** and **apple**, receives much attention. The vineyards in the neighbourhood of Lake Erie yield large supplies of **wine** ; and **sugar**, from the sugar-maple, is also largely produced.

**Stock-raising** and **dairy-farming** are very prosperous. In 1874 the total exports of cattle were 39,000, of which less than 500 went to Great Britain ; the annual value of cattle now received from the Dominion exceeds £1,500,000 sterling. The output of cheese, too, has reached gigantic proportions.

### Forestry.

Forests occupy about one and a quarter million square miles, and constitute a great source of wealth. The **timber** trade occupies a large number of hands. The trees are felled and floated down the streams to well-appointed saw-mills. Vast floating rafts of logs form a striking feature of the St. Lawrence traffic. In 1900 the export of **forest products** amounted to over £6,000,000. There is a growing trade in constructional wood-work, as window and door frames, etc. ; **wood-pulp** is largely in demand for paper-making.

### Mining.

Canada is one of the richest mineral countries in the world. In 1897 the total value of the mineral products was £6,000,000—nearly three times the output of 1886 ; in 1900 it had reached £12,000,000.

**Coal** is the principal product. The coal areas already in course of development are estimated at nearly 100,000 square miles ; the chief are in Nova Scotia (600 square miles), Manitoba (15,000 square miles), the Rocky Mountains (50,000 square miles) from

the southern boundary to the Peace River, and the Pacific coast. In 1900 over five million tons were raised, three of which were obtained in Nova Scotia, and one and a half in British Columbia.

**Iron.**—The Dominion is destined to take a high place in the iron and steel world. Its iron ores have a very wide range. Nova Scotia possesses an abundance of the richest ore-producing iron, equal to that obtained from the finest Swedish; along the northern shores of Lake Superior there are apparently boundless deposits, and also near Sault Ste. Marie.

At present Ontario, Quebec, Nova Scotia, and British Columbia are the chief sources of supply, to which may be added the famous mines of Belle Island (Newfoundland). At Sydney, Cape Breton Island, and Sault Ste. Marie, important iron and steel works are in progress; and other centres are awakening into activity. A few years ago, a Canadian iron industry was very improbable; now, Canadian steel is already being imported into the United Kingdom.

**Gold** to the value of about £5,500,000 was obtained in 1900. The Yukon district (Klondyke) contributed almost four-fifths of the whole; British Columbia a quarter as much; and Nova Scotia and Ontario decreasing quantities.

Other metals of importance are copper, nickel, silver, and lead. Of the 4,000 tons of copper in 1899, British Columbia yielded the greater portion.

**Petroleum.**—Most of the oil is obtained at Oil Springs and Petrolia in Ontario; it also exists in Quebec, Nova Scotia, and New Brunswick; and in the North-West Territories there is a vast unexplored oil region. At present the output is insufficient for home consumption.

### Fisheries.

The fisheries are very productive, and in 1900 reached a value of £4,300,000. Of this the share of Nova Scotia was more than one-third, New Brunswick and British Columbia each more than one-sixth. The chief features of the catches are the **salmon** of British Columbia, the **cod** and **lobsters** of Nova Scotia, the **herrings** of New Brunswick, and the **trout** of Ontario.

The salmon-canning of British Columbia is more extensive than in all the other provinces together, amounting to nearly three-quarter million cases. The **seal** fishery has decreased since the introduction of various restrictions. In 1899 only 28,000 seals were captured, or less than one-third of the number in 1895.

## Railways.

Canada has 165 railways, with 17,800 miles of track (1900). The Canadian Pacific Company controls 25 of the lines, and has a total mileage of 6,680 miles. The Grand Trunk system has about half this mileage, consisting chiefly of a network of lines south of the St. Lawrence.

The **Canadian Pacific Railway** extends from Quebec and Halifax to Vancouver—from the Atlantic to the Pacific. Montreal is the headquarters of the line, and from this point the line is 2,906 miles long. It passes through Ontario to Sudbury, where a branch passes to Sault Ste. Marie, and thence to the United States. The main line crosses Ontario to Port Arthur, at the head of Lake Superior. At Winnipeg there are several southern branch lines connected with the northern lines of the United States at Portal, on the southern boundary, and rejoining the main line near Regina. At Dunmore the line again divides, one branch crossing the Rocky Mountains *via* Crow's Nest Pass, tapping the rich resources of the Kootenay regions; the other passes through Calgary, and crosses the great range at Kicking Horse Pass, and thence through the Selkirk Range to Vancouver on the Pacific coast. The Canadian Pacific Railway forms an important link in the all-British route round the world; it brings Japan within twenty-one days of London.

From Montreal another branch of the Canadian Pacific Railway follows the left bank of the St. Lawrence and the coast of Lake Ontario to Toronto, proceeding to the farthest limits of Ontario, terminating at Windsor on Detroit River.

## Canals.

The canals in connection with the St. Lawrence are of great importance, and, by avoiding natural obstructions, allow vessels to traverse the whole of the great lakes without breaking bulk. The area of the great Laurentian lakes is 73,000 square miles, exclusive of Michigan (25,000), which lies wholly in the United States.

In 1899, 29,680 vessels passed through the canals, carrying 6,500,000 tons of freight and 214,000 passengers. About four-fifths of the vessels were Canadian, and one-fifth United States.

The Welland, Lachine, Cornwall, and Rideau Canals are the largest and best known.



FROM THE GREAT LAKES TO THE ROCKIES.



## Commerce.

No portion of the British Empire has so rapidly developed its resources.

TRADE, 1868-1900 (IN MILLION POUNDS APPROXIMATE).

	Imports.	Exports.	Total Trade.
1868.....	15	12	27
1878.....	19	16	35
1888.....	22	18	40
1898.....	28	33	61
1899.....	33	32	65
1900.....	38	38	76

In 1899 the United States supplied 65 per cent. of the Canadian imports, and took 28 per cent. of the exports; the United Kingdom supplied 22 per cent., and took 62 per cent.

The chief articles of export in order of value are wood and wood products, cheese, wheat and flour, bacon, cattle, fish, butter, etc.

The chief imports are iron and steel manufactures, coal, woollens, sugar, tea, coffee, silk, etc.

### TRADE WITH THE UNITED KINGDOM (1900).

Imports from the United Kingdom .....	£7,605,000
Exports to                   ,,                   ,, .....	21,764,000

The latter consisted of:—

Wood and wood products.....	£5,380,000
Cheese .....	3,799,000
Wheat and flour .....	2,776,000
Cattle.....	1,806,000
Butter.....	990,000
Maize .....	1,070,000
Etc., etc.	

The chief imports from the United Kingdom were:—

Woollens .....	£1,470,000
Cottons .....	1,087,000

A British Preferential Tariff came into force on August 1, 1898, by which the goods of the United Kingdom, West Indies, India, Ceylon, Straits Settlements, and New South Wales were admitted into the Dominion under tariff rates 25 per cent. less

than those imposed on foreign goods. On July 1, 1900, the preferential tariff was increased to  $33\frac{1}{3}$  per cent.

**Ottawa** (60,000) is the capital and the seat of government; it has a great lumbering trade.

**Montreal** (350,000) is the largest city, the chief port, and the commercial capital. It is the centre of the Canadian railways, and is connected with the United States by rail and canal.

**Toronto** is next in importance.

The chief ports in order of tonnage are Montreal, Victoria (B.C.), Halifax (N.S.), Quebec, and St. John (N.B.).

### NEWFOUNDLAND

is an island over 40,000 square miles in area. The shores are rugged in the extreme; mountains extend along almost the entire length of the western coast; lakes and marshes occupy one-third of the whole area. The climate is cold and severe and subject to fogs. It is a mistake, however, to consider the country as "a bare littoral swept by glacial seas, and inhabited only by a few fishermen. Nothing can be further from the truth. To be sure, she does smell of fish; and a very good thing this is for her. But in the years to come she will have great mining communities, for *copper, iron, lead, silver, and coal* are all stored in good quantity beneath her soil." *Barley and oats* are the chief crops; but wheat does not succeed.

The colony is the oldest of the British possessions; yet to all intents and purposes, by the treaty of Utrecht of 1713, the French remain masters of 700 miles of coast for the purpose of catching and drying fish. The terms of the treaty forbade the French to erect any buildings along the western coast other than stages made of boards, and huts requisite and necessary for drying fish.

Fifty years later, the islands of Miquelon and St. Pierre were ceded to France as shelters for French fishermen. No buildings, however, were to be erected thereon except for the purpose of the fishery, nor were the French to winter in the islands. Notwithstanding this, in 1886 French fishermen commenced fishing for lobsters, and two years later erected factories for the purpose of canning lobsters; which, the British maintain, is contrary to the treaty.

The "French shore" difficulty is most acute. The French claim the exclusive right of fishing off the western shore, and *deny the right of the Newfoundlanders to make either fishing, agricultural, or mining settlements there.*

Little wonder that scarcely a fishing season passes without friction and unpleasantness between the colonists and their French rivals. It is a great pity the French rights cannot be bought outright, or that we cannot allow them full rights of occupation in certain well-defined spots, such as they hold in India at Pondicherry. The former plan would be far preferable, but even the alternative would remove a serious obstacle to the progress and well-being of a large portion of the island.

The **Grand Banks** of Newfoundland are 600 miles long and 200 miles broad; they swarm with cod and nearly every other variety of fish. (See page 51.)

## 1900.

Imports.  
£1,540,000.

Exports.  
£1,772,000.

The products of the fisheries account for most of the exports:—

Dried cod.....	£1,120,000.	Seal oil.....	£89,000.
Cod oil.....	62,000.	Lobsters (tinned).....	90,000.
Seal skins.....	33,000.	Herring (pickled).....	30,000.

There are 650 miles of railway and over 1,300 miles of telegraph line; a fleet of eight first-class steamers provides good communication with the mainland.

**St. John's**, the capital, has a population of about 30,000, which is doubled in the fishing season. Most of the Atlantic cables between Europe and America terminate at Heart's Content, Trinity Bay.

## BRITISH WEST INDIES.

	Area (square miles).	Population.	1900.	
			Imports.	Exports.
Jamaica.....	4,200	755,000	£1,652,000	£1,797,000
Bahama Islands.....	4,400	52,000	335,000	197,000
Leeward Islands.....	701	128,000	346,000	279,000
Windward Islands.....	784	155,000	733,000	636,000
Barbados.....	166	190,000	1,045,000	919,000
Trinidad and Tobago...	1,868	275,000	2,500,000	2,585,000

The West India Islands have a total area of about 95,000 square miles. The British islands have an area of 13,700 square miles, and a population of about one and a half million. The productions are very varied, and include sugar, rum, molasses, coffee,



(Each square is 500 miles.)

cocoa, tobacco, arrowroot, lime-juice, fruits (pineapple, orange, banana), sponges, pearls, and turtles. Pitch is obtained from a bituminous lake in Trinidad. The inhabitants of the islands are chiefly the descendants of freed slaves.

The competition of bounty-fed beet-sugar has almost ruined the cane-sugar industry, which was formerly the chief support of the West Indies. The signing of an International Convention for the abolition of sugar bounties, to take effect in September 1903, bids fair to restore prosperity to the cane-planters. To enable the islands to tide over their difficulties, the British Government in 1902 voted £250,000. Great attention is now being paid to fruit cultivation, and specially-constructed steamers are conveying oranges, pineapples, and bananas to the markets of Great Britain. A Royal Commission suggested bananas might revive the fortunes of Jamaica. Twenty thousand bunches per month are now exported.

Trinidad is particularly prosperous: thirty steamers per month call at Port-au-Prince.

In 1900 the islands exported to the United Kingdom products valued at £1,500,000, and in return took clothing, machinery, and metals to the value of £2,000,000.



## CENTRAL AND SOUTH AMERICA.

	Area (square miles).	Population.	1900.	
			Imports.	Exports.
British Honduras.....	7,500	35,000	£240,000	£260,000
British Guiana.....	120,000	280,000	1,394,000	1,896,000
Falkland Islands.....	7,000	1,700	67,000	112,000

The wealth of **Honduras** lies chiefly in its mahogany and log-wood ; but the productions also include sugar, coffee, sarsaparilla, rubber, etc. The United Kingdom takes half the exports.

**British Guiana.**—For many years Venezuela disputed the boundary of the colony ; but in 1899 the matter was settled by arbitration. One-third of the population is engaged on the sugar plantations. The chief exports are sugar, molasses, rum, and gold.

The **Falkland Islands** are in the South Atlantic, 300 miles from the coast of South America. The coasts abound in whales, seals, and penguins. The chief exports are wool and sealskins.

# APPENDIX.

## I.

### DISTANCES FROM LONDON BY RAIL, AND DURATION OF JOURNEY BY EXPRESS (APPROXIMATE).

City	Miles.	Days.	Hrs.
Berlin.....	745	0	23
Brindisi .....	1,460	2	11
Brussels .....	240	0	8
Constantinople.....	2,030	3	4
Copenhagen.....	880	1	11
Lyons.....	609	0	20
Madrid.....	1,170	1	13
Marseilles.....	827	1	1
Moscow .....	2,130	3	12
Naples....	1,354	2	2
Paris.....	267	0	8 $\frac{1}{2}$
Rome .....	1,192	1	19
St. Petersburg.....	1,728	2	20
Stockholm .....	1,284	2	4
Venice .....	1,036	1	18
Vienna.....	991	1	11

## II.

## DISTANCES FROM ENGLAND BY SEA, AND APPROXIMATE TRANSIT AND COST OF TELEGRAMS.\*

To.	Distance.	Transit.	Telegrams —per word.
			s. d.
Accra .....	3,920	20	6 4
Adelaide .....	1,100	35	3 6
Alexandria .....	3,460	6	1 7
Bermuda .....	2,970	14	2 6
Bombay .....	6,630	17	3 10
Brisbane .....	12,800	44	5 0
Buenos Ayres .....	7,160	22	4 3
Calcutta .....	8,440	20	3 10
Cape Town .....	5,980	16	4 0
Colombo .....	6,300	20	3 11
Gibraltar .....	1,210	4 $\frac{1}{2}$	0 3 $\frac{1}{2}$
Guiana .....	3,960	13 $\frac{1}{2}$	7 2
Hobart .....	13,250	37	3 6
Honduras .....	5,700	16	{ By post from New York.
Hong-Kong .....	9,834	36	
Labuan .....	9,100	30	5 7
Madras .....	7,600	19	4 11
Malta .....	2,280	...	3 10
Melbourne .....	11,260	36	0 6
Newfoundland .....	2,500	7	4 11
Panama .....	5,468	19	1 0
Pekin .....	11,770	39	5 0
Perth .....	10,000	28	5 7
Quebec .....	2,634	6	3 6
New York .....	3,100	6	1 0
Jamaica .....	5,000	16	1 0
Rangoon .....	7,660	21	3 0
Rio Janeiro .....	5,750	17	4 0
Singapore .....	8,700	24	{ 3 6 to 6 0
Santiago (Chili) .....	<i>Via Cape Horn,</i>	{ 34 to 40	4 4
	11,000		
	<i>Via Panama,</i>		
	9,000		6 2
Sydney .....	12,040	40	4 10
Vancouver .....	5,540	15	1 6
Wellington .....	16,000	38	5 1
Yokohama .....	11,260	38	6 11
Zanzibar .....	8,064	20	5 0

\* Where more than one route is available, the average rate is given.

## III.

## THE METRIC SYSTEM.

THE Metric System of Weights and Measures is based on decimal principles, and by its adoption the ordinary processes of arithmetic are considerably simplified. The system originated in France, from whence it has spread to Austria, Belgium, Germany, Greece, Holland, Italy, Portugal, Russia, Spain, Scandinavia, Switzerland, Turkey, and most of the states of Central and Southern America. These countries include almost the whole of the civilized world, with the exception of Great Britain and the United States.

In some of the countries mentioned, however, the system is not enforced to the exclusion of older methods; and instances may be given where the customs tariff is assessed by the metric system, while the commodities concerned are collected or distributed over the country by other means.

**Units.**—Certain standards of measurements, called “units,” are fixed, higher and lower denominations of which are obtained by multiplication and division respectively, always using 10 or a power of ten in either operation.

In multiplication, *Greek* prefixes are used.

In division, *Latin* prefixes are employed.

## Multiplication.

Deka = 10  
Hecto = 100  
Kilo = 1,000  
Myria = 10,000

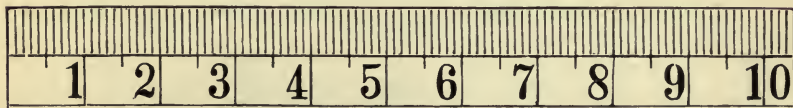
## Divisors.

Milli =  $\frac{1}{1000}$  = '001  
Centi =  $\frac{1}{100}$  = '01  
Deci =  $\frac{1}{10}$  = '1

The **metre** is the unit of length, and is the basis of all measures—length, surface, volume, capacity, weight; it measures 39·3708 inches, and is the ten-millionth part of a line drawn from the pole to the equator.

The rule below represents a decimetre =  $\frac{1}{10}$  of a metre = 3·93708 inches.

The ten divisions are centimetres; the small subdivisions are millimetres.





## THE CHIEF TABLES AT A GLANCE.

Proportion.	Length.	Capacity.	Weight.
$\frac{1}{1000}$ part.	Millimetre.	Centilitre.	Milligramme.
$\frac{1}{100}$ part.	Centimetre.	Decilitre.	Centigramme.
$\frac{1}{10}$ part.	Decimetre.	Litre.	Decigramme.
Unit.*	<b>Metre.</b>	<b>Decalitre.</b>	<b>Gramme.</b>
10 times.	Decametre.	Hectolitre.	Decagramme.
100 times.	Hectometre.	Kilolitre.	Hectogramme.
1,000 times.	Kilometre.	Myrialitre.	Kilogramme.
10,000 times.	Myriametre.		Myriagramme.

\* The value of the unit being given, the values of the divisions and multiples are easily ascertained by altering the position of the decimal point.

## Long Measure.

	Inches.
10 millimetres = 1 centimetre =	3937079.
10 centimetres = 1 decimetre =	3937079.
10 decimetres = 1 metre =	3937079.
10 metres = 1 decametre =	3937079.
10 decametres = 1 hectometre =	3937079.
10 hectometres = 1 kilometre =	3937079.
10 kilometres = 1 myriametre =	3937079.

## Square Measure.

The unit of surface measure is the "are," which is a square whose side is 10 metres long, with a surface of 100 square metres.

	Square yards.
10 centiares = 1 deciare =	1196033.
10 deciares = 1 are =	1196033.
10 ares = 1 dekare =	1196033.
10 dekares = 1 hectare =	1196033.

## Cubic Measure.

The unit of cubic measure is the "stere," which is a cubic metre = 35.3165 cubic feet.

	Cubic feet.
10 decisteres = 1 stere =	353165.
10 steres = 1 decastere =	353165.

In the tables of surface and volume, the metre may be retained for the sake of simplicity, thus :—

Square.	Cubic.
100 sq. millimetres = 1 sq. centimetre.	1,000 c. millimetres = 1 c. centimetre.
100 sq. centimetres = 1 sq. decimetre.	1,000 c. centimetres = 1 c. decimetre.
100 sq. decimetres = 1 sq. metre.	1,000 c. decimetres = 1 c. metre.

## Measure of Capacity.

The unit of the measure of capacity, dry and liquid, is the “litre,” which is the volume of a cubic decimetre = 1·7598, or about  $1\frac{3}{4}$  pints.

	Pints.
10 centilitres = 1 decilitre =	1760773.
10 decilitres = 1 litre =	1760773.
10 litres = 1 decalitre =	1760773.
10 decalitres = 1 hectolitre =	1760773.
10 hectolitres = 1 kilolitre =	1760773.

## Measure of Weight.

The unit of the measure of weight is the “gramme,” which equals the weight of a cubic centimetre of distilled water at 4° Centigrade = 0352739 ounces.

	Ounces.
10 milligrammes = 1 centigramme =	000352739.
10 centigrammes = 1 decigramme =	00352739.
10 decigrammes = 1 gramme =	0352739.
10 grammes = 1 decagramme =	352739.
10 decagrammes = 1 hectogramme =	352739.
10 hectogrammes = 1 kilogramme =	352739.
10 kilogrammes = 1 myriagramme =	352739.
10 myriagrammes = 1 quintal =	352739.
10 quintals = 1 tonne =	352739.

## Money.

The decimal coinage proposed for the United Kingdom has the “sovereign” for unit, as at present.

10 mils	= 1 cent.
10 cents	= 1 florin.
10 florins	= £1.
Thus, £7, 5 florins, 4 cents, 9 mils	= 7549 mils
	= £7·549
	= 75·49 florins, etc., etc.

## IV.

## FOREIGN MONEY, WITH ENGLISH EQUIVALENTS.

No attempt is here made to give a full list of foreign coins, but chiefly those of general importance in international commerce. Where the rate of exchange greatly varies, the values given are usually the average over considerable periods.

Country.	Gold Coins.	English Equivalent.	Silver Coins.	English Equivalent.	Nickel or Bronze Coins.	English Equivalent.	Accounts in dollars, florins, francs, milreis, pesos, tael, or kroners.
Argentina .....	Argentino (5 pesos).	£ 1 0 0 s. 0 0 d. 0	Peso, or dollar (100 centesimos).	8. d. 4 0	—	d. —	Accounts in dollars.
Austria-Hungary ...	20 kronen. 10 ” Ducat.	0 16 8 0 8 4 0 8 0	Gulden, or florin. Krone. $\frac{1}{2}$ krone.	1 8 0 10 0 5	—	—	Accounts in florins.
Belgium .....	20 francs. 10 ” 5 ”	0 16 0 0 8 0 0 4 0	5 francs. 2 ” 1 ”	4 0 1 7 0 9 $\frac{9}{16}$	20 centimes. 10 ” 5 ”	2 1 $\frac{1}{2}$	Accounts in francs.
Brazil .....	10 milreis.	1 2 6	Milreis.	2 3	—	—	Accounts in milreis.
Chili .....	5 pesos.	1 0 10	Peso.	4 0	—	—	Accounts in pesos.
China .....	—	—	Tael (= 10 mace = 1,000 cash). Dollar.	5 10 4 2	—	—	Accounts in Haikwan tael, of which about 7 = £1.
Denmark..... Norway..... Sweden.....	20 kroner. 10 ” 5 ”	1 2 3 0 11 1 $\frac{1}{2}$ 0 5 6 $\frac{1}{2}$	Krone. 2 kroner.	1 11 $\frac{1}{2}$ 2 3	5 ores.	$\frac{1}{2}$	Accounts in kroners. 18 = £1.

<b>Egypt</b> .....	100 piastres. 50 "	1 0 6 0 10 3	20 piastres. 10 " 1 "	4 1 2 0 $\frac{1}{2}$ 0 2 $\frac{1}{2}$	2 millieme.	$\frac{1}{2}$	Accounts in piastres.
<b>France</b> .....	20 francs. 10 " 5 "	0 16 0 0 8 0 0 4 0	5 francs. 2 " 1 " 20 centimes.	4 0 1 7 0 9 $\frac{3}{10}$ 0 2	10 centimes ( $\frac{1}{10}$ franc). 5 centimes (sou).	1 $\frac{1}{2}$	Accounts in francs. 25·225 francs = £1.
<b>Germany</b> .....	20 marks. 10 "	1 0 0 0 10 0	5 marks. 2 " 1 "	5 0 2 0 1 0	20 pfennige. 10 " 1 "	$2\frac{1}{4}$ $1\frac{1}{4}$ $\frac{1}{2}$	Accounts in marks. 20·43 = £1.
<b>Greece</b> .....	20 drachmai. 5 "	0 14 3 0 3 9	Drachmai (= 1 franc).	0 9 $\frac{9}{10}$	—	—	Accounts in drachmai and lepta. 100 lepta = 1 drachmai. 25·225 drachmai = £1.
<b>Holland</b> .....	10 guilders.	0 16 0	Guilder. 50 cents. 25 "	1 8 0 10 0 5	5 cents. $2\frac{1}{2}$ " "	1 $\frac{1}{2}$	Accounts in guilders. 12 = £1.
<b>India</b> .....	—	—	Rupee (nominally 2s.). 8 annas. 4 "	1 4 0 7 0 3 $\frac{1}{2}$	$\frac{1}{2}$ anna. $\frac{1}{4}$ " "	$\frac{1}{2}$ $\frac{1}{4}$	Accounts in rupees. 16 = £1.
<b>Italy</b> .....	20 lire.	0 15 10	Lira (= 1 franc).	0 9 $\frac{9}{10}$	—	—	Accounts in lire. 25·225 = £1.
<b>Japan</b> .....	5 yen.	1 0 10	Yen, or dollar.	4 2	5 sen.	2	Accounts in yen.
<b>Mexico</b> .....	Doubloon. $\frac{1}{2}$ doubloon.	3 4 8 1 12 4	Peso, or dollar.	4 2	—	—	Accounts in dollars and cents. 100 cents = 1 dollar.



## FOREIGN MONEY, WITH ENGLISH EQUIVALENTS—Continued.

Country.	Gold Coins.	English Equivalent.	Silver Coins.	English Equivalent.	Nickel or Bronze Coins.	English Equivalent.	Accounts in soles, milreis, roubles, pesetas, francs, piastres, dollars, bolivars.
Peru .....	Libra.	£ 8 0 1 0 0	Sole. $\frac{1}{2}$ sole.	d. 2 0 1 0	—	d. —	Accounts in soles. 10 = £1.
Portugal .....	Crown.	1 3 4	Milreis. Teston (= 100 reis).	4 5 0 5 $\frac{1}{4}$	—	—	Accounts in milreis. 4·5 = £1.
Russia .....	Imperial (= 10 roubles).	1 12 3	Rouble (= 100 kopecks).	3 1 $\frac{1}{2}$	Kopeck.	$\frac{1}{2}$	Accounts in roubles. 16·4 = £1.
Spain .....	20 pesetas. 10 "	0 16 0 0 8 0	Peseta (= 1 franc). 50 cents.	0 9 $\frac{5}{16}$ 0 4	10 cents. 5 "	1 $\frac{1}{2}$	Accounts in pesetas. 25·225 = £1.
Switzerland.....	No gold coins.	No gold coins.	5 francs. Franc.	4 0 0 9 $\frac{3}{16}$	20 centimes. 10 " 5 "	2 1 $\frac{1}{2}$	Accounts in francs. 25·225 = £1.
Turkey .....	100 piastres.	0 18 1	Piastre.	0 2 $\frac{1}{4}$	—	—	Accounts in piastres. 110 = £1.
United States .....	Eagle (= 10 dollars). $\frac{1}{2}$ eagle. Dollar.	2 1 8 1 0 9 0 4 2	Dollar. Dime (= 10 cents).	4 2 0 5	2 cents. 1 "	1 $\frac{1}{2}$	Accounts in dollars. 4·86 = £1.
Venezuela.....	—	—	Bolivar (= 1 franc).	0 9 $\frac{5}{16}$	—	—	Accounts in bolivars. 25·225 = £1.

## V.

## FOREIGN WEIGHTS AND MEASURES, WITH ENGLISH EQUIVALENTS.

THE following is a list of useful weights and measures in common use in countries where the metric system is either not legalized or not generally enforced.

**ARABIA.**

1 tomand	= 168 lbs. (avoir.).
1 maund	= 3 lbs.
1 behar	= 450 lbs.
1 gudda	= 2 gallons.

**BRAZIL.**

1 libra	= 1·012 lbs. (avoir.).
1 arroba	= 32·38 lbs.
1 alquerre	= 1 imperial bushel.

**CHINA.**

10 fun	= 1 tsun = 1·41 inches.
10 tsun	= 1 chih = 14 inches.

1 ko	= 2 pints.
1 tou	= 100 pints.

1 tael	= $1\frac{1}{3}$ oz. (avoir.).
1 kun	= $1\frac{1}{3}$ lbs. (avoir.).

**DENMARK.**

1 pund	= 1·1 lbs. (avoir.).
1 centner	= 100·23 lbs. (avoir.).
1 tonde	= 3·8 bushels (grain).
1 tonde	= 246·9 lbs. (butter).

**EGYPT.**

1 ardeb	= 4·9 bushels (variable).
1 kantar	= 99·8 lbs.
1 oke	= 2·7 lbs.

**GREECE.**

1 ocque	= $2\frac{3}{4}$ lbs.
1 quintal	= 123 lbs.
1 livre	= 1 lb.

**JAPAN.**

1 kin	= 1·325 lbs. (avoir.).
1 kwan	= 8·28 lbs. (avoir.).
1 chō	= 2·45 acres.
1 koku	= 4·9 bushels.

**PERSIA.**

1 batman	= $13\frac{1}{2}$ lbs. (avoir.).
1 gaz	= 25 inches.
1 parasang	= 4 miles.

**RUSSIA.**

1 pood	= 36 lbs. (avoir.).
63 poods	= 1 ton.
1 verst	= 0·6629 statute mile.
1 vedro	= $2\frac{3}{4}$ imperial gallons.
1 ship last	= 2 tons (nearly).

**TURKEY.**

1 oke (1 kilogramme)	= 2·83 lbs.
1 kilch (1 hectolitre)	= 0·912 bushel.
1 pik	= 27 inches.
1 almund	= 1 gallon.

**UNITED STATES.**

British weights and measures generally employed, with the exception of the retention of the old Winchester gallon and bushel.

1 wine gallon	= 0·833 gallon.
1 ale gallon	= 1·01695 gallons.
1 bushel	= 0·969 imperial bush.

The cental (100 lbs.) takes the place of the cwt., hence the ton = 2,000 lbs.

## VI.

## MONEY, WEIGHTS, AND MEASURES OF GREATER BRITAIN.

## Money.

IN addition to the British coinage, which is legal currency in nearly every portion of the British Empire, the following coins are in use in the respective countries :—

**BARBADOS.**

Pound = 14s. 3d.

Dollar = 4s. 6d.

Shilling = 8½d.

**CANADA.**

As in the United States.

Dollar = 4s. 2d.

100 cents = 1 dollar.

Accounts in dollars and cents.

4·86 dollars = £1.

**CYPRUS.**

English, French, and Turkish gold pieces.

1 piastre = 2d.

**GIBRALTAR.**

The legal currency is that of Spain.

Peseta = 1 franc; but for exchange usually about 29 pesetas = £1.

**MALTA.**

Louis = 19s. 1½d.

Pezza = 4s.

**HONG-KONG.**

The Mexican dollar and Chinese tael are common.

5, 10, 20, and 50 cent pieces.

**INDIA.**

Rupee (nominally 2s.) = 1s. 4d.

8 annas = 7d.

4 „ = 3½d.

½ „ = ½d.

Accounts in rupees.

16 = £1.

**MAURITIUS.**

Rupee = 1s. 4d.

5, 2, and 1 cent pieces.

**SINGAPORE.**

Dollar = 4s. 2d. nominal; the value fluctuates considerably. The average value is about 2s.

Also rupees and annas.

**WEST INDIES.**

Dollars and cents.

## Weights and Measures.

Imperial Weights and Measures are practically in force throughout Greater Britain, India being almost the only notable exception.

**Indian Weights and Measures.**—The **Tola** (180 grains) is the basis of the system of weights. The **Maund**, which is largely used, varies in different localities. In Bengal it equals 82 lbs.; in Bombay, 28 lbs.; and in Madras, 25 lbs.

In Bengal the chief measure of length is the **Hath** ( $1\frac{1}{2}$  feet); but the English yard is much in use.

An Act has been passed to provide India with a uniform decimal system of weights and measures, in which the **Ser** (1 kilogramme) is the unit of weight, and also the unit of capacity  
= 1 litre = 1·76 pints.



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